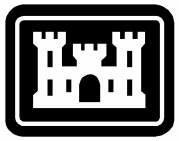

US Army Corps
of Engineers®

Seattle District

RFP No. W912DW-05-R-0009

NPR Spare Transformers – Reverse Auction

Various Northwest Locations

Supply Solicitation and Specifications

May 2005

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THIS PROCUREMENT IS:

Open to both Large and Small Business

PRE-PROPOSAL CONFERENCE:

Seattle District Corps of Engineers will be hosting a Pre-proposal Conference on 7 June 2005 at 9:00 a.m. Local Time., in the Galaxy Room. Although attendance is not mandatory, it is important that you attend the demonstration of the Reverse Auction process.

In addition to addressing the requirements of the Request for Proposal further information will be provided on the Reverse Auction Process along with an on-line demonstration. The point of contact is Sharon Gonzalez at (206) 764-6696 Sharon.j.gonzalez@usace.army.mil. Please notify the POC via email with information on who will be attending on behalf of your firm.

Security regulations are in effect and it is advised that you arrive early, as you will be required to show picture identification and pass through security screening before being allowed to attend the conference. A visitors badge will be issued that you will be required to wear in a visible location on your person.

Address: Seattle District Corps of Engineers
4735 E. Marginal Way South
Seattle, WA 98134

BIDDING DOCUMENTS: Register for solicitations at the Internet site: http://www.nws.usace.army.mil/ct/

PLANHOLDER'S LISTS: Lists may also be obtained from the same site

FOR INQUIRIES, CONTACT THE FOLLOWING INDIVIDUAL(S) Monday through Friday between the hours of 7:30 a.m. and 4:00 p.m.:

ADMINISTRATIVE MATTERS:

Sharon Gonzalez (206)764-6692 FAX: (206)764-6817 sharon.j.gonzalez@usace.army.mil

TECHNICAL MATTERS:

For Technical Matters, questions must be submitted via the internet on the ProjNet Bid Inquiry website www.projnet.org. To submit inquiries, Bidders will need to enter their email address and the **Bid Inquiry Key**, shown below. A password is not required.

After entering the website, click the Bid tab at top and select Bidder Inquiry.

At Bid Inquiry Login page, enter USACE (Agency), enter Key (shown below), and your email address. Click Login.

At Create Account page, Bidders need to complete the form only once to create their user accounts. Once a user account is established, Bidders will only need to enter their email address and the Bid Inquiry Key to submit technical

inquiries.

After the user account is created, the Select Option page allows Bidders to Post A New Inquiry or View Inquiries. Bidders will receive an email acknowledgement of their question, followed by an email when their question has been answered. Bidder must enter the website to view the actual answer to their question. All submitted questions and responses are viewable to all Bidders at this website.

There are five Bid Inquiry Keys for this solicitation. Bidders are requested to segregate questions accordingly for ease of resolution. There is one key for the non-technical "front" sections -- all sections except SECTION J. There is one key for each of the technical sections -- Sections J1, J2, J3, and J4.

Non-technical "front" sections: **23EAEI-1ACFII**

Detroit Dam Spare Transformer -- Technical Section J1 and Detroit plans: **18EAEI-4ACGB**

Dworshak Dam Spare Transformer -- Technical Section J2 and Dworshak plans: **10EAEI-12ACGC**

Libby Dam Spare Transformer -- Technical Section J3 and Libby plans: **25EAEI-20ACGD**

Little Goose Spare Transformer -- Technical Section J4 and Little Goose plans: **93EAEI-16ACGE**

! ! ! C A U T I O N T O O F F E R O R S ! ! !

1. **BUSINESS HOURS:** For the Seattle District Corps of Engineers are from 7:30 A.M. to 4:00 P.M., Monday through Friday.

2. **AMENDMENTS: Have you acknowledged receipt of ALL** amendments? If in doubt as to the number of amendments issued, please contact the representative listed on the Information Page.

3. **AMENDED PAGES: If any of the amendments furnished amended pages, the amended pages must be used** in submitting your offer.

4. **OFFER ACCEPTANCE PERIOD:** The minimum offer acceptance period is specified in block 12 Standard Form 33, Solicitation, Offer and Award. Please ensure that you allow at least the stated number of calendar days for the Government to accept your offer.

5. **CENTRAL CONTRACTOR REGISTRATION:** Per DFARS Clause 252.204-7004, REQUIRED CENTRAL CONTRACTOR REGISTRATION, in Section I, registration is required prior to award of any contract from a Solicitation issued after May 31, 1998. No Contract Award will be made to an unregistered contractor. Internet access allows contractors to register by completing an electronic on-line registration application from CCR homepage at http://www.ccr.gov/. For further assistance in completing your on-line registration, contact the nearest Procurement Technical Assistance Center (PTAC) near you. A list of the nearest PTAC is located at: http://www.dla.mil/db/procurem.htm

6. **HUBZONE CERTIFICATION**: Per FAR Clause 52.219-4, NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (OCT 2004) in Section I. A HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration Reference: https://eweb1.sba.gov/hubzone/internet/.

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SOLICITATION, OFFER AND AWARD	1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	RATING	PAGE 1 OF PAGES

2. CONTRACT NO.	3. SOLICITATION NO.	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NO.
	W912DW-05-R-0009	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)	May 31, 2005	W68MD9-4302-4556

7. ISSUED BY	CODE	8. ADDRESS OFFER TO *(If other than Item 7)*
USA Engineer District, Seattle ATTN: CENWS-CT PO Box 3755, Seattle, WA 98124-3755	Tel: 206-764-6696 Fax: 206-764-6817	See Item 7 or Handcarry to: Seattle District, USACE 4735 E. Marginal Way South Seattle, WA 98134

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and 5 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located Contracting Division, 2nd Floor, Col C-5 until 2:00 PM *(Hour)* local time 30 June 2005 *(Date)*

CAUTION - LATE Submissions, Modifications, and Withdrawals: Section L, Provision No. 52.214-7 or 52.215-10.
All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code) (NO COLLECT CALLS)*
	Sharon Gonzalez	(206)764-6696

11. TABLE OF CONTENTS

(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
X	A	SOLICITATION/CONTRACT FORM		X	I	CONTRACT CLAUSES	
X	B	SUPPLIES OR SERVICES AND PRICES/COST		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
X	C	DESCRIPTION/SPECS./WORK STATEMENT		X	J	LIST OF ATTACHMENTS	
X	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
X	E	INSPECTION AND ACCEPTANCE		X	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
X	F	DELIVERIES OR PERFORMANCE					
X	G	CONTRACT ADMINISTRATION DATA		X	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
X	H	SPECIAL CONTRACT REQUIREMENTS		X	M	EVALUATION FACTORS FOR AWARD	

OFFER *(Must be fully completed by offeror)*

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within 120 calendar days *(60 calendar days unless a different period is inserted by offeror)* from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT *(See Section I, Clause No. 52.232-8)*	10 CALENDAR DAYS %	20 CALENDAR DAYS %	30 CALENDAR DAYS %	CALENDAR DAYS %

14. ACKNOWLEDGMENT OF AMENDMENTS *(The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:*	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*

15B. TELEPHONE NO. *(Include area code)*	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
	☐		

AWARD *(To be completed by Government)*

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:

☐ 10 U.S.C. 2304(c) ( ) ☐ 10 U.S.C. 253(c) ( )

23. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)* — ITEM

24. ADMINISTERED BY *(If other than Item 7)*	CODE	25. PAYMENT WILL BE MADE BY	CODE
		US Army Corps of Engineers Finance Center CEFC-AO-P 5722 Integrity Drive Millington, TN 38054-5004	

26. NAME OF CONTRACTING OFFICER *(Type or print)*	27. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

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IF THE CONTRACTOR IS A CORPORATION OR PARTNERSHIP, THE **APPLICABLE PORTION** OF THE FORM LISTED BELOW MUST BE COMPLETED. IN THE ALTERNATIVE, OTHER EVIDENCE MUST BE SUBMITTED TO SUBSTANTIATE THE AUTHORITY OF THE PERSON SIGNING THE CONTRACT. IF A CORPORATION, **THE SAME OFFICER SHALL NOT EXECUTE BOTH THE CONTRACT AND THE CERTIFICATE.**

CORPORATE CERTIFICATE

I, _____, certify that I am the _____ Secretary of the Corporation named as Contractor herein; that _____, who signed this contract on behalf of the Contractor was then _____of said corporation; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

_____ (CORPORATE
(Secretary) SEAL)

AUTHORITY TO BIND PARTNERSHIP

This is to certify that the names, signatures and Social Security Numbers of all partners are listed below and that the person signing the contract has authority actually to bind the partnership pursuant to its partnership agreements. Each of the partners individually has full authority to enter into and execute contractual instruments on behalf of said partnership with the United States of America, except as follows: (state "none" or describe limitations, if any) _____

This authority shall remain in full force and effect until such time as the revocation of authority by any cause whatsoever has been furnished in writing to, and acknowledged by, the Contracting Officer.

(Names, Signatures and Social Security Numbers of all Partners)

NAME	SIGNATURE	SOCIAL SECURITY NO.
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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Section B - Supplies or Services and Prices

SCHEDULE B

SECTION B

SUPPLIES OR SERVICES AND PRICES/COST

Notes for Schedule:

1. This solicitation contains four separate schedules identified as B1, B2, B3, and B4, Offerors may submit a proposal on one or more schedules; however, all line items within each schedule must be completed in order to participate in the reverse auction process.

2. The Government contemplates award of separate contracts for each schedule to the responsive, responsible offeror who submits a technically acceptable proposal and at completion of the reverse auction is the lowest price for the total of all the items in the respective Price Schedule in accordance with Section M EVALUATION FACTORS FOR AWARD.

3. Reverse Auction, See Section M, paragraph M.3 a.(8).

4. Offerors must submit a price proposal with their technical proposal. (See Section L)

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SECTION B1

SUPPLIES OR SERVICES AND PRICES/COSTS

Detroit Dam 230 kV Spare Transformer Supply

ITEM NO.	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
1001	Design one 29,000 kVA, 230 kV, Class OFAF, 1-phase spare power transformer.	1	LS	XXXXX	$_____
1002	Manufacture, factory test, and deliver one 29,000 kVA, 230 kV, Class OFAF, 1-phase spare power transformer and accessories complete to railhead in Foster, Oregon, and provide services of Erecting Engineer.	1	LS	XXXXX	$_____
1003	Perform delivery inspection, and truck transport transformer and accessories from railhead in Foster, Oregon, to Foster Dam.	1	LS	XXXXX	$_____
1004	Offload transformer and accessories at Foster Dam, perform inspection and tests, move transformer to permanent storage location, and assemble the transformer.	1	LS	XXXXX	$_____
1005	Furnish transformer oil, oil-fill transformer, and perform field tests.	1	LS	XXXXX	$_____
1006	Furnish jacks, and tools.	1	LOT	XXXXX	$_____
1007	Furnish spare parts.	1	LOT	XXXXX	$_____
1008	Contractor furnished training.	1	LS	XXXXX	$_____
	TOTAL SCHEDULE B1:				$_____

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SECTION B2
SUPPLIES OR SERVICES AND PRICES/COSTS
Dworshak 500 kV Spare Transformer Supply

ITEM NO.	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
2001	Design one 121,500/162,000 kVA, 500 kV, Class ONAN/ONAF, single phase spare power transformer.	1	LS	XXXXX	$_____
2002	Manufacture, factory test, and deliver one 121,500/162,000 kVA, 500 kV, Class ONAN/ONAF, single phase spare power transformer and accessories complete to railhead in Ashaska, Idaho, and provide services of Erecting Engineer.	1	LS	XXXXX	$_____
2003	Perform delivery inspection, and truck transport transformer and accessories from railhead in Ashaska, Idaho, to the Dworshak Dam powerhouse.	1	LS	XXXXX	$_____
2004	Offload transformer and accessories at Dworshak Dam, perform inspection and tests, move transformer to permanent storage location, and assemble the transformer.	1	LS	XXXXX	$_____
2005	Furnish transformer oil, oil-fill transformer, and perform field tests.	1	LS	XXXXX	$_____
2006	Furnish jacks, and tools.	1	LOT	XXXXX	$_____
2007	Furnish spare parts.	1	LOT	XXXXX	$_____
2008	Contractor furnished training.	1	LS	XXXXX	$_____
	TOTAL SCHEDULE B2:				$_____

SECTION B3

SUPPLIES OR SERVICES AND PRICES/COSTS

Libby Dam 230 kV Spare Transformer Supply

ITEM NO.	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
3001	Design one 192,000/256,000 kVA, 230 kV, Class ONAN/ONAF, 3-phase spare power transformer.	1	LS	XXXXX	$_____
3002	Manufacture, factory test, and deliver one 192,000/256,000 kVA, 230 kV, Class ONAN/ONAF, 3-phase spare power transformer and accessories complete to railhead in Libby, Montana, and provide services of Erecting Engineer.	1	LS	XXXXX	$_____
3003	Perform delivery inspection, and truck transport transformer and accessories from railhead in Libby, Montana, to the Libby Dam Powerhouse.	1	LS	XXXXX	$_____
3004	Offload transformer and accessories at Libby Dam, perform inspection and tests, move transformer to permanent storage location, and assemble the transformer.	1	LS	XXXXX	$_____
3005	Furnish transformer oil, oil-fill transformer, and perform field tests.	1	LS	XXXXX	$_____
3006	Furnish jacks, and tools.	1	LOT	XXXXX	$_____
3007	Furnish spare parts.	1	LOT	XXXXX	$_____
3008	Contractor furnished training.	1	LS	XXXXX	$_____
	TOTAL SCHEDULE B3:				$_____

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SECTION B4

SUPPLIES OR SERVICES AND PRICES/COSTS

Little Goose 500 kV Spare Transformer Supply

ITEM NO.	SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
4001	Design one 82,000/109,334 kVA, 500 kV, Class ONAN/ONAF, single phase spare power transformer.	1	LS	XXXXX	$_____
4002	Manufacture, factory test, and deliver one 82,000/109,334 kVA, 500 kV, Class ONAN/ONAF, single phase spare power transformer and accessories complete to railhead in Ayer, Washington, and provide services of Erecting Engineer.	1	LS	XXXXX	$_____
4003	Perform delivery inspection, and truck transport transformer and accessories from railhead in Ayer, Washington, to the Little Goose Dam Powerhouse.	1	LS	XXXXX	$_____
4004	Offload transformer and accessories at Little Goose Dam, perform inspection and tests, move transformer to permanent storage location, and assemble the transformer.	1	LS	XXXXX	$_____
4005	Furnish transformer oil, oil-fill transformer, and perform field tests.	1	LS	XXXXX	$_____
4006	Furnish jacks, and tools.	1	LOT	XXXXX	$_____
4007	Furnish spare parts.	1	LOT	XXXXX	$_____
4008	Contractor furnished training.	1	LS	XXXXX	$_____
	TOTAL SCHEDULE B4:				$_____

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DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Contracting Division

SUBJECT: W912DW-05-R-0009, Electrical Transformers, Various Dams in Washington, Oregon, Idaho, and Montana.

NOTICE TO LARGE BUSINESS FIRMS: (RFP)

Your attention is directed to the contract clauses entitled "Utilization of Small Business Concerns (May 2004) (52.219-8) and "Small Business Subcontracting Plan" (Jan 2002) (52.219-9, Alt II), which are included in this solicitation. If you are a large business, and your offer is **$1,000,000** or more you are required to submit a subcontracting plan **with** your proposal. Award will not be made under this solicitation without a subcontracting plan approved by the Contracting Officer.

As described in the FEDBIZOPS notification, we consider the following goals reasonable and achievable during the performance of the contract resulting from this solicitation. However, final goals will be negotiated prior to contract award. The Subcontracting Plan will then become a material part of your contract.

a. 50% of planned subcontracting dollars can be placed with all small business concerns.

b. 10% of planned subcontracting dollars can be placed with those small business concerns owned and controlled by socially and economically disadvantaged individuals **or** Historically Black Colleges and Universities or Minority Institutions. NOTE: b. is a subset of a.

c. 5% of planned subcontracting dollars for small women-owned businesses. NOTE: c. is a subset of a. Also, the women-owned business may meet the definition of a small disadvantaged business. If so, c. will also be a subset of b. (Count firm in all applicable areas.)

d. 3% of planned subcontracting dollars may be placed with HUBZone small business concerns. NOTE: d. is a subset of a. Note: A HUBZone firm may also SDB, women-owned and/or veteran-owned. Count firm in all applicable areas).

e. 3% of planned subcontracting dollars for veteran-owned small business. NOTE: e. is a subset of a. Go to http:///www. va.gov/osdbu/vetctr.htm or http://www.sba.gov/VETS/ for questions concerning the Veterans Business Development program.

f. 3% of planned subcontracting dollars may be placed with service-disabled veteran-owned small business. NOTE: f. is a subset of a. and e.

Goals included in any proposed plan submitted by you should be at least equal to the ones we are recommending. If lesser goals are proposed, you will have to explain how those goals and your plan represent your best efforts to comply with the policy outlined in the contract clauses. There are a number of equally important aspects of the plan. You should familiarize yourself with the requirements set forth in the contract clauses relating to the subcontracting plan *before* submitting a proposal.

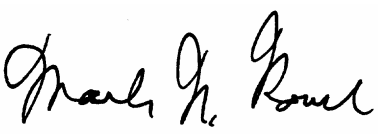
Your plan will be reviewed and scored in accordance with AFARS Appendix D to ensure it clearly represents your firm's ability to carry out the terms and conditions set forth in the contract clauses. A Subcontracting Plan with a score of less than 70 may not be accepted. It is recommended that you use the enclosed example as a guide to assist you in developing your own subcontracting plan/program. The example is intended to assist you in developing your own subcontracting plan/program. Delete the instructions shown in parenthesis or your plan for subcontracting to small business will not be approved. If discussions during the evaluation of your subcontracting program raises doubts as to your intentions or ability to comply with FAR clause 52.219-9 it could result in your ineligibility for award.

Your plan must address how you will maximize subcontracting opportunities with the small business communities to be found within the project location. Demonstrated outreach efforts through conference attendance, use of the Central Contractor Registration (CCR) Dynamic Small Business Search, corporate support of your Small Business Program Liaison Officer and Small Business Program must be addressed in your subcontracting plan.

Your Small Business Program Managers' attendance at DOD Regional Council Meetings for Small Business Education and Advocacy will be a contract requirement. **DOD Policy Guidance:** In accordance with the Small Business Act, it is the policy of the federal government to aid, assist, and counsel small business to ensure that a fair share of contracts are awarded to small business. Consistent with this, it is the policy of DOD to sponsor regional councils as one significant way to aid, assist, and counsel large business through education and advocacy *of its members who are charged with the responsibility of fulfilling this federal policy.* Therefore, be advised that the individual listed in paragraph 7 of the example will be required to attend these regional council meetings and that attendance must be addressed in your subcontracting plan. Your plan must be submitted with your price proposal.

Should you have any questions or need assistance in DEVELOPING YOUR SUBCONTRACTING PLAN please call the undersigned at (206) 764-6807. If you need TECHNICAL ASSISTANCE call J. Alex Smith at (206) 764-6804.

Sincerely,



Mark N. Roush
Director of Small Business

Enclosure

NOTE: This is an example plan. You may use this example as a guide in developing your own Small Business Program. Delete all the instructions (parenthesis), including this message, or your plan will be returned.

SMALL BUSINESS SUBCONTRACTING PLAN

DATE:

CONTRACTOR:

ADDRESS:

PHONE NO:

PROJECT TITLE:

SOLICITATION NO:

1. In accordance with the contract clauses at 52.219-8 and 52.219-9, (name of contractor) submits the following Subcontracting Plan for Small, Small Disadvantaged, and Women-owned Business Concerns.

2. Corresponding dollar values for percentages cited in para. 3 for the base period only:

a. Total contract amount is $_____.
b. Total dollars planned to be subcontracted (to all types of businesses): $_____.
c. Total dollars planned to be subcontracted to small business concerns (including 2d, 2e, 2f, 2g, and 2h below): $_____.
d. Total dollars planned to be subcontracted to small disadvantaged business concerns: $_____.
e. Total dollars planned to be subcontracted to small woman-owned business concerns: $_____.
f. Total dollars planned to be subcontracted to HUBZone small business: $_____.

g. Total dollars planned to be subcontracted to veteran-owned small business concerns $_____.
h. Total dollars planned to be subcontracted to service-disabled veteran-owned small business concerns. $_____.

3. The following percentage goals (expressed in terms of a percentage of total planned subcontracting dollars) are applicable to the contract awarded under the solicitation cited above.

a. Small Business Concerns (2c divided by 2b): _____% of total planned subcontracting dollars under this contract will go to subcontractors who are small business concerns including 3c through 3e.

b. Small Disadvantaged Business Concerns (2g divided by 2b): _____% of total planned subcontracting dollars under this contract will go to subcontractors who are small disadvantaged individuals. **(NOTE: SDB firms must be certified by SBA** and meet the definition under clause 52.219-8(c)(3)).

c. Small Woman-Owned Business Concerns (2h divided by 2b):_____% of total planned subcontracting dollars under this contract will go to subcontractors who are small woman-owned businesses

d. Small HUBZone Business Concerns (2f divided by 2b): _____% of total planned subcontracting dollars under this contract will go to subcontractors who are HUBZone small business contractors. (SEE the definition in contract clause 52.219-8(c) or use the internet: http://www.sba.gov/hubzone/ for further information.)

e. Veteran-owned small business concerns (2d divided by 2b):_____% of total planned subcontracting dollars under this contract will go to subcontractors who are veteran-owned small business.

f. Service-disabled veteran-owned small business concerns (2e divided by 2b): _____% of total planned subcontracting dollars under this contract will go to subcontractors who are service-disabled veteran-owned small business.

4. The principal items or areas we will subcontract under this contract are:

a. Of the items or areas stated in 4; the following are planned to be subcontracted to Small Businesses (LIST THE NAME AND RESPONSIBILITY OF FIRM):

b. Of the items or areas stated in 4.a; the following are planned to be subcontracted to Small Disadvantaged Businesses (LIST THE NAME AND RESPONSIBILITY OF FIRM):

c. Of the items or areas stated in 4.a; the following are planned to be subcontracted to Small Women-Owned Businesses (LIST THE NAME AND RESPONSIBILITY OF FIRM):

d. Of the items or areas stated in 4.a; the following are planned to be subcontracted to HUBZone small business concerns (LIST THE NAME AND RESPONSIBILITY OF FIRM):

e. Of the items or areas stated in 4.a; the following are planned to be subcontracted to Veteran-owned Small Business concerns (LIST THE NAME AND RESPONSIBILITY OF FIRM):

f. Of the items or areas stated in 4.a; the following are planned to be subcontracted to Service-disabled veteran-owned small business concerns (LIST THE NAME AND RESPONSIBILITY OF FIRM):

****NOTE: SEE LAST PAGE IF THIS SOLICITATION HAS OPTION YEARS OR PERIODS** (DELETE THIS STATEMENT FROM YOUR PLAN)******

5. Provide a description of the method your firm used to develop the subcontracting goals in paragraph 3:

6. Indirect costs were ( ) were not ( ) used in establishing subcontracting goals. **If indirect costs are included in your goals, furnish a description of the method used to determine the proportionate share of indirect costs to be incurred with (i) small business concerns (ii) small disadvantaged business concerns (iii) women-owned small business concerns (iv) HUBZone small business concerns (v) Veteran-owned small business concerns and (vi) Service-disabled veteran-owned concerns **

7. The following individual will administer (name of contractor) Subcontracting Program: (**NOTE TO OFFERORS: The individual named here will be expected to perform and manage your plan and contract clause 52.219-9). Site Construction project managers may not be acceptable as your small business advocate that manages your Corporate Small Business Program).**

Name:_____ Job Title:_____
Address and Telephone Number: _____

This individual's specific duties with regard to the conduct of our firm's Subcontracting Plan will include, but will not be limited to, the following:

a. Developing and maintaining bidders lists of small business, HUBZone small business, small disadvantaged business and women-owned small business concerns using sources such as the CCR Dynamic Small Business Search (http://www.ccr.gov/), State Offices of Minority and Women-owned Business Enterprises, Business Development Agency, US Department of Commerce, Local Minority Business Development Centers, Economic Development Centers, and National Center for American Indian Enterprise Development.

b. Assuring the inclusion of small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns in all solicitations for products or services which they are capable of providing; and ensuring that all solicitations are structured to permit the maximum possible participation by small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns.

c. Establishing and maintaining records of all solicitations and subcontract awards to ensure that the members of the firm who review bidders proposals documents their reasons for selecting or not selecting a bid submitted by a small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small

business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns.

d. Preparing and submitting the Subcontracting Report for Individual Contracts (SF 294) and the Summary Subcontract Report (SF 295) in accordance with instructions provided, and coordinating and preparing for all compliance reviews by Federal agencies.

e. Attendance at DOD sponsored training programs in order to develop guidance and training to firm personnel on the policy of the federal government to aid, assist, and counsel small business under this and other government contracts.

f. Conducting or arranging for all other activities necessary to further the intent and attainment of the goals in the Plan to include motivational training of the firm's purchasing personnel, attendance at workshops, seminars and trade fairs conducted by or on behalf of small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns.

8. The following steps will be taken to ensure that small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns receive notice of and have an equitable opportunity to compete for intended awards of subcontracts and/or purchase orders for the products and/or services describe in paragraph 4 above:

a. Sources will be requested through the CCR Dynamic Small Business Search, business development organizations, minority and small business trade associations and at small, minority, veteran small business and women-owned small business procurement conferences; sources will be contacted; and bidding materials will be provided to all responding parties expressing an interest.

b. Internally, motivational training will be conducted to guide and encourage purchasing personnel; source lists and guides to small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns will be maintained and utilized by purchasing personnel while soliciting subcontracts and purchase orders; activities will be monitored to ensure sufficient time is allowed for interested bidders to prepare their proposals and to evaluate continuing compliance with the Subcontracting Plan.

9. [Name of contractor] agrees that the clause entitled "Utilization of Small Business Concerns" (Oct 2000) will be included in all subcontracts that offer further subcontracting opportunities. All subcontractors, except small business concerns, who receive subcontracts in excess of $500,000 ($1,000,000 in the case of construction) will be required to adopt a subcontracting plan that complies with the requirements of this clause. Such plans will be reviewed to assure that all minimum requirements of an acceptable subcontracting plan have been satisfied.

10. (Name of contractor) agrees to submit such periodic reports and cooperate in any studies or surveys as may be required by the Contracting agency or Small Business Administration in order to determine the extent of compliance by the offeror with the subcontracting plan and with the clause entitled "Utilization of Small Business Concerns" contained in the contract.

11. (Name of Contractor) agrees to maintain at least the following types of records to document compliance with the Subcontracting Plan:

a. The names of all organizations, agencies, and associations contacted for small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns along with records of attendance at conferences, seminars and trade fairs where additional sources were developed.

b. Source lists, guides, and other data identifying small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns.

c. Records on all subcontract solicitations resulting in an award of more than $100,000 on a contract-by-contract basis, indicating (1) whether small business concerns were solicited, and if not, why not; (2) whether veteran-owned small business concerns were solicited, and if not, why not; (3) whether service-disable veteran-owned small business concerns were solicited, and if not, why not; (4) whether HUBZone small business were solicited, and if not, why not; (5) whether small disadvantaged business concerns were solicited, and if not, why not; and (6) whether small women-owned business concerns were solicited, and if not, why not; and (7) reasons for the failure of solicited small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns to receive a subcontract award.

d. Records of all subcontract award data to include subcontractor's name and address, to be kept on a contract-by-contract basis.

e. Minutes of internal motivational and training meetings held for the guidance and encouragement of purchasing personnel, and records of all monitoring activities performed for compliance evaluation.

f. Copies of SF 294 and SF 295 showing date and place of filing and copies of all other reports or results of reviews conducted by the contracting agency or other interested agencies of the Federal government to monitor our compliance with this Subcontracting Plan.

12. (Name of Contractor) will submit a SF 295, Summary Subcontract Report, on Corps of Engineers projects only. The SF 295 shall be completed and distributed in accordance with the Corps of Engineers Supplemental Instructions. (Name of Contractor) will not report Corps of Engineers projects through any other Agency unless authorized by the Contracting Officer.

13. In closing, (Name of contractor) states that it will be the policy of (Name of contractor) to afford every practicable opportunity for small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns to participate in contracts awarded to (Name of contractor) by the Federal Government, to ensure that equitable opportunity is provided small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns to compete for award of subcontracts and purchase orders, and to diligently pursue the achievement of our goals of participation by small business concerns, small disadvantaged business concerns, women-owned small business concerns, HUBZone small business concerns, veteran-owned small business concerns and service-disabled veteran-owned small business concerns in the dollars available for subcontract/purchase order awards under this contract.

BY: _____

_____ DATE:

_____

Signature and Title of CEO
Company Name

NOTE: If this solicitation has options (or option periods) , the plan must contain separate goals for ***each*** option or option period (year). EXAMPLE:

	Dollars	Percentage
1. Optional Yr _____ total:	$_____	_____
2. Total to be subcontracted to all types of businesses:	$_____	_____
a. Subcontracted to Small Business (including b, c, d, e, and f below):	$_____	_____
b. Subcontracted to Small Disadvantaged Businesses:	$_____	_____
c. Subcontracted to Women-Owned Small Businesses:	$_____	_____
d. Subcontracted to HUBZone concerns	$_____	_____
e. Subcontracted to Veteran-owned Small Business:	$_____	_____
f. Subcontracted to Service-disabled Veteran-owned Small Business	$_____	_____

1. Optional Yr _____ total:	$_____	_____
2. Total to be subcontracted to all types of businesses:	$_____	_____
a. Subcontracted to Small Business (including b, c, d, e, and f below):	$_____	_____
b. Subcontracted to Small Disadvantaged Businesses:	$_____	_____
c. Subcontracted to Women-Owned Small Businesses:	$_____	_____
d. Subcontracted to HUBZone concerns	$_____	_____
e. Subcontracted to Veteran-owned Small Business:	$_____	_____
f. Subcontracted to Service-disabled Veteran-owned Small Business	$_____	_____

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CLAUSE TABLE OF CONTENTS

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Section C - Descriptions and Specifications

*

C.1 SCOPE OF WORK

For each of the separate Schedules B1 through B4 under this Solicitation No. W912DW-05-R-0009 a separate set of technical specifications is included under Section J which accompany and form a part hereof for the respective detailed requirements for the supplies/services listed in the Schedules as follows:

Schedule	Technical Specifications	Document Reference
B1	C1	See Section J1, Attachment B
B2	C2	See Section J2, Attachment B
B3	C3	See Section J3, Attachment B
B4	C4	See Section J4, Attachment B

C.2 CHANGES IN THE SCOPE

The Government reserves the right, as required, to revise or amend the Specifications prior to the date set for Receipt of Proposals. Such revisions, if any, will be announced by amendment or amendments to this solicitation. Copies of such amendments as may be issued will be made available to all prospective offerors. If the revisions and amendments are of a nature which require material changes in quantities or prices proposed, or both, the date set for receipt of proposals may be extended in order to provide offerors with sufficient time to revise their proposals. In such cases, the amendment will include an announcement of the new date for receipt of proposals.

C.3 DESIGNATION OF CONTRACT MANAGER

Within five calendar days from the date of award, the Contractor shall notify the Government as to whom it has designated as the Contract Manager for the work to be performed under this contract. The Contract Manager shall serve as the point of contact between the Government and the Contractor and shall have full authority to act on behalf of the Contractor.

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Section D - Packaging and Marking

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D.1 PROTECTION OF MATERIAL AND WORK

At all times prior to delivery, and as also specified in paragraph D.2, all materials, supplies, and equipment of every description including property which may be Government-owned and all work performed shall be protected and preserved. All reasonable requests from the Government to enclose or specially protect such property shall be complied with. If, as determined, material, equipment, supplies, and work performed are not adequately protected, such property may be protected by the Government and the cost thereof may be charged to the Contractor or deducted from any payment due. All machinery, materials, and articles in a complete or incomplete state for which progress payment has been made prior to delivery shall be adequately protected from loss and from corrosion and all other forms of damage.

D.2 PACKAGING, MARKING AND SHIPMENT

(1) All material and articles shall be prepared and loaded for shipment in such manner as to protect them from damage in transit, and any and all damage shall be made good until the equipment is delivered to the Government at the specified delivery point. The Contractor shall also be responsible for and make good any damages due through their fault or negligence occurring during assembly and testing of the equipment at the powerhouse. Where necessary, heavy parts or machines shall be mounted on skids or shall be crated, and any articles or materials that might otherwise be lost shall be boxed or wired in bundles and plainly marked for identification. All parts exceeding two hundred (200) pounds of gross weight shall be prepared for shipment so that slings for handling by the crane may be readily attached while the parts are on the car or transport truck. Boxed parts, where it is unsafe to attach slings to the box, shall be packed with slings attached to the part, the slings to project through the box or crate so that attachment to the hoisting equipment can be readily made.

(2) No material or equipment shall be shipped until after it has been inspected and accepted for shipment by the Government, or unless inspection of the equipment has been waived in writing. The Government shall be notified at least 15 calendar days in advance as to the expected shipment dates of the equipment.

(3) The Government will accept delivery of materials and equipment when delivered at the specified delivery point in accordance with provisions of SECTION F. The Government shall be notified at least 30 calendar days in advance as to the expected delivery dates of the equipment.

(4) All accessories and spare parts shall be packed separately in containers plainly marked, ACCESSORIES ONLY, or SPARE PARTS ONLY. A packing list, listing the contents of each container, shall be placed in a moisture-proof envelope and securely fastened to the outside of the container. Each spare part or accessory shall be identified so that it can be easily matched against its entry on the packing list. The packing list shall provide the following information for each spare part or accessory in the container:

a) Manufacturer

(b) Contract number

(c) Identification, including the manufacturer's drawing number reference

(5) As soon as each shipment is made shipping notices shall be submitted on which shall be shown, in addition to the usual data, a description of the article furnished, the item number of the contract schedule to which the article applies, the shipping weight of each item, the number of pieces, the total weight, and if shipped by railroad carload lots the car number.

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Section E - Inspection and Acceptance

*

E.1 REFERENCES

The publications listed below form a part of this section to the extent referenced:

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.12.90	(1999) Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers

E.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES":

SD-01 Pre-manufacture Submittals

Quality Control (QC) Plan; G, Hydroelectric Design Center (HDC)

The Contractor's Quality Control (QC) Plan Shall be submitted not more than 30 days after contract award.

SD-09 Manufacturer's Field Reports

Material Inspection and Receiving Report; G, Contracting Officer's Representative (COR)

A Material Inspection and Receiving Report shall be submitted at the time of delivery of the transformer complete with accessories and spare parts, f.o.b. destination. (See Clause 252.246-7000 at the end of this section)

E.3 SUPPLY QUALITY MANAGEMENT, CONTRACTOR QUALITY CONTROL

E.3.1 General Information

An effective Contractors Quality Control (CQC) inspection system shall be established and maintained in compliance with contract clause, INSPECTION OF SUPPLIES - FIXED PRICE. The CQC inspection system shall include but not be limited to plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction, safety, and operations which comply with the requirements specified in the Technical Sections.

E.3.2 Quality Control Plan

Not more than 30 days after contract award, the Contractor shall submit for approval the Quality Control (QC) Plan. If an acceptable plan is not obtained prior to the date specified, the Contracting Officer may refuse to allow work to begin or withhold funds from payment, in accordance with Contract Clause, METHODS OF PAYMENT, until such time that an acceptable CQC plan is submitted. The Contractors standard factory QC plan or modification thereof may be used as long as it contains the following salient features:

(1) A description, including names and responsibilities, of the QC organization hierarchy.

(2) Procedures to be used to manage submittals and to ensure compliance with the approved submittals and the contract requirements.

(3) Procedures for ensuring compliance with the contract requirements when using subcontractors and testing laboratories.

(4) Specific tests and inspections during salient phases of work used to verify QC plan is functioning properly.

(5) Actions taken when material are found to be not in conformance with the contractual requirements.

(6) Procedures for inspections and acceptance for delivered materials (whether bulk or assembled/manufactured equipment).

(7) Description of records kept to document the progress, parts and components to be supplied.

E.3.3 Submittal Management

Submittals shall be as specified in SECTION 01330 and elsewhere in the Technical Sections. The CQC manager shall be responsible for certifying that all submittals are in compliance with the contract requirements.

E.3.4 Acceptance of the Plan

Acceptance of the CQC plan is required prior to the start of work. Acceptance is conditional; and will be predicated on the satisfactory performance during the contract period. The Government reserves the right to require the Contractor to make changes in the CQC plan and operations as necessary to obtain the quality specified.

E.3.5 Notification of Changes

After acceptance of the CQC plan, the Contracting Officer shall be notified in writing of any proposed changes to the plan. Proposed changes are subject to approval.

E.3.6 Tests

Tests that are specified or required shall be performed to verify that control measures are adequate to provide a product that conforms to the contract requirements. The Contractor shall employ the services of an industry recognized testing laboratory or establish an approved testing facility. A list of tests the Contractor intends to perform shall be included as part of the CQC plan submitted

E.4 INSPECTION

E.4.1 General

The work will be conducted under the general direction of the Contracting Officer and is subject to inspection by the Government's Quality Assurance Representatives to ensure strict compliance with the terms of the contract in accordance with Contract Clause INSPECTION OF SUPPLIES - FIXED PRICE. The Contractor shall keep the Contracting Officer informed as to the general progress of the work and shall notify the Contracting Officer when any item of equipment or component part thereof is ready for testing. Unless otherwise approved or specified in these specifications, the Contractor shall notify the Contracting Officer in writing a minimum of 5 working days prior to any inspections, measurements, tests, or trials. If the work is not located within the continental United States, the Contractor shall provide the Contracting Officer written notice as to the expected date of witnessing 7 weeks in advance. Inspection and/or test reports involving measurements shall include calibration and certification data for the instruments used. No Government Quality Assurance Representative is authorized to

change any provision of the specifications without written authorization of the Contracting Officer, nor shall the presence or absence of a Government Quality Assurance Representative relieve the Contractor from any requirements of the contract.

E.4.2 Re-Inspection

Inspections requiring the presence of the Contracting Officer, as set forth in this contract, will be re-inspected only once by the Government at its expense, except for foreign inspection. If a third inspection is required the Contractor shall reimburse the Government for all costs incurred for the travel, meals, etc. A required 2nd foreign inspection of the same item to verify compliance with these specifications shall be at the Contractor's expense and the Government shall be reimbursed by the contractor for all costs incurred for the travel, meals, etc.

E.5 FINAL EXAMINATION AND ACCEPTANCE

When all the work for the transformer has been completed and has successfully met the requirements of the factory and field tests, the Government will make a thorough examination of the transformer and if it is found to comply with the requirements of the contract, the transformer will be accepted and the Contractor so notified.

E.6 FAILURE TO MEET SPECIFICATION REQUIREMENTS AND PERFORMANCE GUARANTEES

E.6.1 Failure to Meet Specification Requirements

In conjunction with SECTION 16277, should tests of the oil show that it fails to meet the specification requirements, and should the Contractor fail within a reasonable time to modify the oil so that it will meet the specification requirements, cost of removal and return of non-complying oil and replacement by the Government will be at the Contractor's expense.

E.6.2 Failure to Meet Performance Guarantees

Should tests of the transformer (Section 16277, paragraph 3.2, "FACTORY ASSEMBLY AND TESTS") show that it fails to meet the guaranteed load or no-load losses as included in the Contractor's proposal, when tested per the requirements of IEEE C57.12.90, and should the Contractor fail within a reasonable time to modify the transformer so that it will meet the guaranteed efficiency, and should the transformer otherwise comply with all requirements of the specifications and be in satisfactory operating condition, the Contracting Officer, in lieu of rejection of the transformer, may accept it conditionally. In that event, the Contractor shall pay the Government, or will authorize the Government to withhold from any monies which otherwise would be due them, at the rates indicated below. The withheld sum will be calculated based on the test report losses in kW expressed to two decimal places, without round-off.

E.6.2.1 Detroit Dam 230 kV Spare Transformer

The Contractor shall pay the Government, or will authorize the Government to withhold from any monies which otherwise would be due them, at the rate of $7,030 per kW of loss that the tested no-load losses exceed the guaranteed value and at the rate of $4,470 per kW of loss that the tested load loss exceeds the guaranteed value.

E.6.2.2 Dworshak Dam 500 kV Spare Transformer

The Contractor shall pay the Government, or will authorize the Government to withhold from any monies which otherwise would be due them, at the rate of $6,402 per kW of loss that the tested no-load losses exceed the guaranteed value and at the rate of $3,883 per kW of loss that the tested load loss exceeds the guaranteed value.

E.6.2.3 Libby Dam 230 kV Spare Transformer

The Contractor shall pay the Government, or will authorize the Government to withhold from any monies which otherwise would be due them, at the rate of $11,000 per kW of loss that the tested no-load losses exceed the guaranteed value and at the rate of $8,000 per kW of loss that the tested load loss exceeds the guaranteed value.

E.6.2.4 Little Goose Dam 500 kV Spare Transformer

The Contractor shall pay the Government, or will authorize the Government to withhold from any monies which otherwise would be due them, at the rate of $5,975 per kW of loss that the tested no-load losses exceed the guaranteed value and at the rate of $2,847 per kW of loss that the tested load loss exceeds the guaranteed value.

CLAUSES INCORPORATED BY FULL TEXT

52.246-2 INSPECTION OF SUPPLIES--FIXED-PRICE (AUG 1996)

(a) Definition. "Supplies," as used in this clause, includes but is not limited to raw materials, components, intermediate assemblies, end products, and lots of supplies.

(b) The Contractor shall provide and maintain an inspection system acceptable to the Government covering supplies under this contract and shall tender to the Government for acceptance only supplies that have been inspected in accordance with the inspection system and have been found by the Contractor to be in conformity with contract requirements. As part of the system, the Contractor shall prepare records evidencing all inspections made under the system and the outcome. These records shall be kept complete and made available to the Government during contract performance and for as long afterwards as the contract requires. The Government may perform reviews and evaluations as reasonably necessary to ascertain compliance with this paragraph. These reviews and evaluations shall be conducted in a manner that will not unduly delay the contract work. The right of review, whether exercised or not, does not relieve the Contractor of the obligations under the contract.

(c) The Government has the right to inspect and test all supplies called for by the contract, to the extent practicable, at all places and times, including the period of manufacture, and in any event before acceptance. The Government shall perform inspections and tests in a manner that will not unduly delay the work. The Government assumes no contractual obligation to perform any inspection and test for the benefit of the Contractor unless specifically set forth elsewhere in this contract.

(d) If the Government performs inspection or test on the premises of the Contractor or a subcontractor, the Contractor shall furnish, and shall require subcontractors to furnish, at no increase in contract price, all reasonable facilities and assistance for the safe and convenient performance of these duties. Except as otherwise provided in the contract, the Government shall bear the expense of Government inspections or tests made at other than the Contractor's or subcontractor's premises; provided, that in case of rejection, the Government shall not be liable for any reduction in the value of inspection or test samples.

(e)(1) When supplies are not ready at the time specified by the Contractor for inspection or test, the Contracting Officer may charge to the Contractor the additional cost of inspection or test.

(2) The Contracting Officer may also charge the Contractor for any additional cost of inspection or test when prior rejection makes reinspection or retest necessary.

(f) The Government has the right either to reject or to require correction of nonconforming supplies. Supplies are

nonconforming when they are defective in material or workmanship or are otherwise not in conformity with contract requirements. The Government may reject nonconforming supplies with or without disposition instructions.

(g) The Contractor shall remove supplies rejected or required to be corrected. However, the Contracting Officer may require or permit correction in place,promptly after notice, by and at the expense of the Contractor. The Contractor shall not tender for acceptance corrected or rejected supplies without disclosing the former rejection or requirement for correction, and, when required, shall disclose the corrective action taken.

(h) If the Contractor fails to promptly remove, replace, or correct rejected supplies that are required to be removed or to be replaced or corrected, the Government may either (1) by contract or otherwise, remove, replace, or correct the supplies and charge the cost to the Contractor or (2) terminate the contract for default. Unless the Contractor corrects or replaces the supplies within the delivery schedule, the Contracting Officer may require their delivery and make an equitable price reduction. Failure to agree to a price reduction shall be a dispute.

(i)(1) If this contract provides for the performance of Government quality assurance at source, and if requested by the Government, the Contractor shall furnish advance notification of the time (i) when Contractor inspection or tests will be performed in accordance with the terms and conditions of the contract and (ii) when the supplies will be ready for Government inspection.

(2) The Government's request shall specify the period and method of the advance notification and the Government representative to whom it shall be furnished. Requests shall not require more than 2 workdays of advance notification if the Government representative is in residence in the Contractor's plant, nor more than 7 workdays in other instances.

(j) The Government shall accept or reject supplies as promptly as practicable after delivery, unless otherwise provided in the contract. Government failure to inspect and accept or reject the supplies shall not relieve the Contractor from responsibility, nor impose liability on the Government, for nonconforming supplies.

(k) Inspections and tests by the Government do not relieve the Contractor of responsibility for defects or other failures to meet contract requirements discovered before acceptance. Acceptance shall be conclusive, except for latent defects, fraud, gross mistakes amounting to fraud, or as otherwise provided in the contract.

(l) If acceptance is not conclusive for any of the reasons in paragraph (k) hereof, the Government, in addition to any other rights and remedies provided by law, or under other provisions of this contract, shall have the right to require the Contractor (1) at no increase in contract price, to correct or replace the defective or nonconforming supplies at the original point of delivery or at the Contractor's plant at the Contracting Officer's election, and in accordance with a reasonable delivery schedule as may be agreed upon between the Contractor and the Contracting Officer; provided, that the Contracting Officer may require a reduction in contract price if the Contractor fails to meet such delivery schedule, or (2) within a reasonable time after receipt by the Contractor of notice of defects or nonconformance, to repay such portion of the contract as is equitable under the circumstances if the Contracting Officer elects not to require correction or replacement. When supplies are returned to the Contractor, the Contractor shall bear the transportation cost from the original point of delivery to the Contractor's plant and return to the original point when that point is not the Contractor's plant. If the Contractor fails to perform or act as required in (1) or (2) above and does not cure such failure within a period of 10 days (or such longer period as the Contracting Officer may authorize in writing) after receipt of notice from the Contracting Officer specifying such failure, the Government shall have the right by contract or otherwise to replace or correct such supplies and charge to the Contractor the cost occasioned the Government thereby.

(End of clause)

52.246-16 RESPONSIBILITY FOR SUPPLIES (APR 1984)

(a) Title to supplies furnished under this contract shall pass to the Government upon formal acceptance, regardless of when or where the Government takes physical possession, unless the contract specifically provides for earlier passage of title.

(b) Unless the contract specifically provides otherwise, risk of loss of or damage to supplies shall remain with the Contractor until, and shall pass to the Government upon--

(1) Delivery of the supplies to a carrier, if transportation is f.o.b. origin; or

(2) Acceptance by the Government or delivery of the supplies to the Government at the destination specified in the contract, whichever is later, if transportation is f.o.b. destination.

(c) Paragraph (b) of this section shall not apply to supplies that so fail to conform to contract requirements as to give a right of rejection. The risk of loss of or damage to such nonconforming supplies remains with the Contractor until cure or acceptance. After cure or acceptance, paragraph (b) of this section shall apply.

(d) Under paragraph (b) of this section, the Contractor shall not be liable for loss of or damage to supplies caused by the negligence of officers, agents, or employees of the Government acting within the scope of their employment.

(End of clause)

252.246-7000 MATERIAL INSPECTION AND RECEIVING REPORT (MAR 2003)

(a) At the time of each delivery of supplies or services under this contract, the Contractor shall prepare and furnish to the Government a material inspection and receiving report in the manner and to the extent required by Appendix F, Material Inspection and Receiving Report, of the Defense FAR Supplement.

(b) Contractor submission of the material inspection and receiving information required by Appendix F of the Defense FAR Supplement by using the Wide Area WorkFlow-Receipt and Acceptance (WAWF-RA) electronic form (see paragraph (b)(1) of the clause at 252.232-7003) fulfills the requirement for a material inspection and receiving report (DD Form 250).

(End of clause)

Section F - Deliveries or Performance

*

F.1 TIME OF DELIVERY

(1) The Contractor shall commence work under this contract upon date of contract award, and shall make delivery of all material and equipment and perform the work specified herein in accordance with the following schedule, or per the guaranteed schedule as included in the Contractor's proposal package if a different delivery schedule has been proposed and does not exceed the durations specified herein. In accordance with Section M the offeror shall submit a schedule that includes the following milestones, as a minimum. The schedule will be incorporated into the contract. Within 30 days after award the Contractor shall submit any revisions to the schedule if required.

(a) The transformer, transformer oil, and all accessories and spare parts shall be delivered f.o.b. destination not sooner than 270 calendar days after contract award, and not later than 330 calendar days after contract award.

(b) The transformer shall be positioned, assembled, oil-filled, tested, all accessories installed, and all site work performed not later than 30 calendar days after delivery of transformer f.o.b. destination.

(c) The Contractor's proposed schedule shall include the following milestones, as a minimum:
Date of contract award (for schedule development purposes assume 1 September 2005. Contractor shall revise schedule with actual date of contract award).
The durations required for transformer manufacturing including
design (include design review meeting within 60 days after contract award);
Transformer factory acceptance test period;
Transformer delivery including accessories and spare parts, f.o.b. destination;
Movement of transformer to storage location;
Transformer assembly;
Oil-filling of transformer;
Transformer Field testing;
Training;
O&M Manual submittals;
Preparation for long-term storage including performance of all required site work;
Contract completion date.

F.2 PLACE OF DELIVERY

F.2.1 Detroit Dam 230 kV Spare Transformer

Equipment and materials supplied under this contract shall be delivered f.o.b. destination at the Foster Powerhouse. The Foster Powerhouse is located approximately 38 miles east of Albany, Oregon, off US-20.

F.2.2 Dworshak Dam 500 kV Spare Transformer

Equipment and materials supplied under this contract shall be delivered f.o.b. destination at the Dworshak Powerhouse. The Dworshak Powerhouse is located approximately 4 miles West of Orofino, Idaho, off State Highway 12.

F.2.3 Libby Dam 230 kV Spare Transformer

Equipment and materials supplied under this contract shall be delivered f.o.b. destination at the Libby Powerhouse. The Libby Powerhouse may be reached by taking State Road 37 east from Libby, Montana, to Forest Road 228 which leads to the Libby Dam access road.

F.2.4 Little Goose Dam 500 kV Spare Transformer

Equipment and materials supplied under this contract shall be delivered f.o.b. destination at the Little Goose Powerhouse. The Little Goose Powerhouse is located approximately 10 miles north on Little Goose Dam Road approximately 1000 feet east of Starbuck, Washington, off State Road 261 from State Highway 12.

F.3 PRE-PERFORMANCE CONFERENCE

Within 3 working days after contract award, the Contractor shall call the Contracting Office and make arrangements for a pre-performance conference to be held at the project site. The purpose of the conference is to verify submittal requirements; discuss site work and testing procedures, shop drawings, and administration of Government Quality Assurance; and to develop mutual understanding relative to details of the CQC system, including the forms to be used for recording the CQC operations.

CLAUSES INCORPORATED BY FULL TEXT

52.211-11 LIQUIDATED DAMAGES--SUPPLIES, SERVICES, OR RESEARCH AND DEVELOPMENT (SEP 2000)

(a) If the Contractor fails to deliver the supplies or perform the services within the time specified in this contract, the Contractor shall, in place of actual damages, pay to the Government liquidated damages per calendar day of delay as indicated below for the respective transformer.

Detroit Dam $690.00
Libby Dam $1300.00
Dworshak Dam $ 0
Little Goose Dam $ 0

(b) If the Government terminates this contract in whole or in part under the Default--Fixed-Price Supply and Service clause, the Contractor is liable for liquidated damages accruing until the Government reasonably obtains delivery or performance of similar supplies or services. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(c) The Contractor will not be charged with liquidated damages when the delay in delivery or performance is beyond the control and without the fault or negligence of the Contractor as defined in the Default--Fixed-Price Supply and Service clause in this contract.

(End of clause)

52.242-15 STOP-WORK ORDER (AUG 1989)

(a) The Contracting Officer may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the work called for by this contract for a period of 90 days after the order is delivered to the Contractor,

and for any further period to which the parties may agree. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Within a period of 90 days after a stop-work is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled or the period of the order or any extension thereof expires, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to the adjustment within 30 days after the end of the period of work stoppage; provided, that, if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon the claim submitted at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(End of clause)

52.242-17 GOVERNMENT DELAY OF WORK (APR 1984)

(a) If the performance of all or any part of the work of this contract is delayed or interrupted (1) by an act of the Contracting Officer in the administration of this contract that is not expressly or impliedly authorized by this contract, or (2) by a failure of the Contracting Officer to act within the time specified in this contract, or within a reasonable time if not specified, an adjustment (excluding profit) shall be made for any increase in the cost of performance of this contract caused by the delay or interruption and the contract shall be modified in writing accordingly. Adjustment shall also be made in the delivery or performance dates and any other contractual term or condition affected by the delay or interruption. However, no adjustment shall be made under this clause for any delay or interruption to the extent that performance would have been delayed or interrupted by any other cause, including the fault or negligence of the Contractor, or for which an adjustment is provided or excluded under any other term or condition of this contract.

(b) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved, and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the delay or interruption, but not later than the day of final payment under the contract.

(End of clause)

52.247-34 F.O.B. DESTINATION (NOV 1991)

(a) The term "f.o.b. destination," as used in this clause, means--

(1) Free of expense to the Government, on board the carrier's conveyance, at a specified delivery point where the consignee's facility (plant, warehouse, store, lot, or other location to which shipment can be made) is located; and

(2) Supplies shall be delivered to the destination consignee's wharf (if destination is a port city and supplies are for export), warehouse unloading platform, or receiving dock, at the expense of the Contractor. The Government shall not be liable for any delivery, storage, demurrage, accessorial, or other charges involved before the actual delivery (or "constructive placement" as defined in carrier tariffs) of the supplies to the destination, unless such charges are caused by an act or order of the Government acting in its contractual capacity. If rail carrier is used, supplies shall be delivered to the specified unloading platform of the consignee. If motor carrier (including "piggyback") is used, supplies shall be delivered to truck tailgate at the unloading platform of the consignee, except when the supplies delivered meet the requirements of Item 568 of the National Motor Freight Classification for "heavy or bulky freight." When supplies meeting the requirements of the referenced Item 568 are delivered, unloading (including movement to the tailgate) shall be performed by the consignee, with assistance from the truck driver, if requested. If the contractor uses rail carrier or freight forwarded for less than carload shipments, the contractor shall ensure that the carrier will furnish tailgate delivery, when required, if transfer to truck is required to complete delivery to consignee.

(b) The Contractor shall--

(1)(i) Pack and mark the shipment to comply with contract specifications; or

(ii) In the absence of specifications, prepare the shipment in conformance with carrier requirements;

(2) Prepare and distribute commercial bills of lading;

(3) Deliver the shipment in good order and condition to the point of delivery specified in the contract;

(4) Be responsible for any loss of and/or damage to the goods occurring before receipt of the shipment by the consignee at the delivery point specified in the contract;

(5) Furnish a delivery schedule and designate the mode of delivering carrier; and

(6) Pay and bear all charges to the specified point of delivery.

(End of clause)

52.247-58 LOADING, BLOCKING, AND BRACING OF FREIGHT CAR SHIPMENTS (APR 1984)

(a) Upon receipt of shipping instructions, as provided in this contract, the supplies to be included in any carload shipment by rail shall be loaded, blocked, and braced by the Contractor in accordance with the standards published by the Association of American Railroads and effective at the time of shipment.

(b) Shipments, for which the Association of American Railroads has published no such standards, shall be loaded, blocked, and braced in accordance with standards established by the shipper as evidenced by written acceptance of an authorized representative of the carrier.

(c) The Contractor shall be liable for payment of any damage to any supplies caused by the failure to load, block, and brace in accordance with acceptable standards set forth herein.

(d) A copy of the appropriate pamphlet of the Association of American Railroads may be obtained from that Association.

(End of clause)

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Section G - Contract Administration Data

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G.1 CONTRACT ADMINISTRATOR

The name of the Contracting Officer's Representative will be provided at the time of award of contracts. The contracts will be administered by:

G.1.1 Detroit Dam 230 kV Spare Transformer Supply

U.S. Army Corps of Engineers, Portland District
ATTN: CENWP-CT-S
P.O. Box 2946
Portland, Oregon 97208-2946

G.1.2 Dworshak Dam 500 kV Spare Transformer Supply

U.S. Army Corps of Engineers, Walla Walla District
ATTN: CENWW-CT
201 N. 3rd Ave.
Walla Walla, Washington 99362

G.1.3 Libby Dam 230 kV Spare Transformer Supply

U.S. Army Corps of Engineers, Seattle District
ATTN: CENWS-CT
P.O. Box 3755
Seattle, WA 98124-3755

G.1.4 Little Goose Dam 500 kV Spare Transformer Supply

U.S. Army Corps of Engineers, Walla Walla District
ATTN: CENWW-CT
201 N. 3rd Ave.
Walla Walla, Washington 99362

G.2 INVOICE SUBMITTAL

The contractor shall submit invoices as follows:

G.2.1 Detroit Dam 230 kV Spare Transformer Supply

Submit your invoice and the ENG Form 93, monthly progress payment, to:

U.S. Army Corps of Engineers, Portland District
ATTN: CENWP-CT-S
P.O. Box 2946
Portland, Oregon 97208-2946

G.2.2 Dworshak Dam 500 kV Spare Transformer Supply

Submit your invoice and the ENG Form 93, monthly progress payment, to:

U.S. Army Corps of Engineers, Walla Walla District

ATTN: CENWW-CT
201 N. 3rd Ave.
Walla Walla, Washington 99362

G.2.3 Libby Dam 230 kV Spare Transformer Supply

Submit your invoice and the ENG Form 93, monthly progress payment, to:

U.S. Army Corps of Engineers, Seattle District
ATTN: CENWS-CT
P.O. Box 3755
Seattle, WA 98124-3755

G.2.4 Little Goose Dam 500 kV Spare Transformer Supply

Submit your invoice and the ENG Form 93, monthly progress payment, to:

U.S. Army Corps of Engineers, Walla Walla District
ATTN: CENWW-CT
201 N. 3rd Ave.
Walla Walla, Washington 99362

Section H - Special Contract Requirements

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H.1 REFERENCES

The publications listed below form a part of this section to the extent referenced:

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety and Health Requirements Manual

H.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES":

SD-07 Certificates

1. Bill of Materials; G, Contracting Officer's Representative (COR)

Two copies of the bill of materials listing each item necessary to complete each major equipment assembly shall be submitted at least 30 days prior to delivery of the complete transformer with accessories.

2. Erecting Engineer's Qualifications; G, Hydroelectric Design Center (HDC)

Two copies of the Erecting Engineer's Qualifications shall be submitted at least 60 days prior to delivery of the transformer. The Contractor will not be able to provide a substitute without fulfilling the same qualification requirements and obtaining approval by the Contracting Officer.

H.3 METHODS OF PAYMENTS

Subject to Contract Clause, PAYMENTS, and all the provisions set forth below, payments to the Contractor will be made monthly or at such other times as may be mutually agreed to on estimates of work performed under this contract and not included in any prior estimate. In preparing estimates the machinery, material, and articles which have been purchased, paid for, and received by the Contractor and which are to be incorporated into the completed equipment will be taken into consideration. Estimates of work will be by items as numbered and described in THE SCHEDULE, Section B - Standard Form 33 of the contract. Estimates for all items will be based on a well balanced schedule prepared by the Contractor and approved by the Contracting Officer, apportioning the contract prices of the respective items to the principal features entering into or forming parts of said items. The amount apportioned to each of said principal features shall be separately stated for labor and materials, and the total amount shown by the Schedule for any item shall equal the contract price for said item. In making such progress payments there will be retained 20 percent of the estimated amount in the case of a large business, 10 percent if awarded to small business, and 5 percent if awarded to small disadvantaged business concerns except no retention will be made on payments for items for which the pay units are man-days. Upon satisfactory delivery of the equipment to be furnished hereunder f.o.b. delivery point one-half of the retained percentage will be paid. The remainder of the retained percentage applicable to the equipment will be withheld until after the equipment has been accepted in accordance with the provisions of SECTION E. Payment of the retained percentage will not relieve the Contractor of the responsibility for the satisfactory operation of the equipment and for meeting all the performance guarantees provided for herein. Upon the making of any progress payment on estimates of work performed as aforementioned, title to all equipment, parts, articles, and materials and work in process included in

such estimates of work performed shall forthwith vest in the Government, but nothing herein shall relieve the Contractor of the duties and responsibilities set forth in the contract.

H.4 PARTNERING

The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. Among the objectives are effective and efficient contract performance and are intended to achieve completion within budget, on schedule, and in accordance with the plans and specifications; and to develop a single cooperative management team focused on the success of the project to mutual benefit of all stakeholders. This partnership will be bilateral in makeup, and participation will be totally voluntary. Any cost associated with effectuating this partnership will be agreed to by both parties, and will be shared equally with no change to the contract price. An integral aspect of partnering is the resolution of disputes in a timely, professional, and non-adversarial manner through the use of issue clarification and problem solving. Alternate Dispute Resolution (ADR) methodologies will be encouraged in place of the more formal dispute resolution procedures. ADR will assist in promoting and maintaining an amicable working relationship to preserve the partnership. ADR is a voluntary, non-binding procedure available for use by the parties to this contract to resolve any dispute that may arise during performance.

H.5 REQUIRED INSURANCE FOR WORK AT THE PROJECT

In conjunction with SECTION I Clause, INSURANCE -WORK ON A GOVERNMENT INSTALLATION, and prior to performance of any work, the Contractor shall procure and maintain during the entire period of performance of such work at the projects the following minimum insurance:

(1) Workmen's Compensation and Employer's Liability Insurance. Workmen's Compensation and Employer's Liability Insurance (including Federal Longshoreman and harbor Workers' Insurance) in the amounts specified by the applicable Federal and/or state statutes.

(2) Comprehensive General Liability Insurance.

(a) Personal Injury. Minimum limits of $1,000,000 for injury to or death of any person and $2,000,000 for each accident or occurrence.

(b) Property Damage. May be included in general aggregate limits or combined single unit coverage.) Minimum limits of $1,000,000

(3) Automobile Liability Insurance

(a) Personal Injury. Minimum limits of $1,000,000 for injury or death to any person and $2,000.000 for each accident or occurrence.

(b) Single General Aggregate Limits or Combined Single Unit Coverage. If single general aggregate limits or combined single unit coverage is obtained for general liability and/or automobile liability coverage. Minimum amounts shall be the sum of the personal injury and property coverages required above. Umbrella Form Excess Liability insurance coverage shall be added to general liability and automobile liability coverages to determine if minimum insurance limits are met.

H.6 SUBMITTAL PROCEDURES

See SECTION 01330.

H.7 BILL OF MATERIALS

Two copies of a Bill of Materials listing each item necessary to complete each major equipment assembly shall be furnished at least 30 days prior to delivery of the complete transformer with accessories. This is in addition to the materials schedules required and any list of materials shown on the drawings. This bill of materials shall be complete enough to check each item by quantity, size, and other description as required to assure all material required under the contract has been delivered. It shall be keyed to item numbers on the drawings.

H.8 SERVICES AND PAYMENT OF ERECTING ENGINEER(S)

The Contractor shall give personal attention to the faithful execution and completion of this work and shall provide a transformer manufacturer's erecting engineer on the site of the work continually during the progress of transformer delivery, movement, assembly, testing, and installation. The Erecting Engineer's Qualifications and identification shall be provided in accordance with Para. H.2. The Contractor shall keep a competent agent or an authorized designee, fully authorized to act for it in its absence and to receive such orders as may be given for the proper continuance of the work. Written notice to do any work, to alter any work, or to cease work which the Contractor is obligated to do, or concerning any imperfections in work or any material furnished, when given to the agent in charge of the work shall be considered as notice to the Contractor.

(1) The transformer manufacturer shall provide competent erecting engineer(s). The total cost for erecting engineer(s) services shall be included in the cost of the transformer, under Line Item No. 1002, 2002, 3002, and 4002. The erecting engineer(s) shall be fluent in the spoken and written English language, and shall be responsible for the correctness of the instructions given the erecting Contractor and the assembly and installation of the transformer in its permanent storage location.

(2) The erecting engineer(s) shall be a permanent employee of the transformer manufacturer, and shall have been engaged in the witnessing of field (site) assembly and installation of similar generator step-up power transformers, as specified herein, for a minimum of five (5) years, and shall have performed this work at a minimum of three (3) power generating projects. A verifying contact, name and phone number shall be provided for at least three such facilities. The erecting engineer's qualifications shall be submitted for approval not later than 60 days prior to shipment of the equipment.

(3) The erecting engineer(s) shall provide and be responsible for complete and correct direction during movement of the transformer from the railhead to the facility, movement on site, and site assembly, testing, and installation work, as described in SECTIONS 01010 and 01600. The erecting engineer(s) shall keep a record of all data taken during site assembly, and shall submit to the Government one copy either on request or on completion of the site assembly. In addition to the above, the erecting engineer(s) shall provide the Contracting Officer with a daily report. The report shall include inspection activities, instructions provided, test results, recommendations and observations. The work and operations of the erecting engineer (s) will be coordinated with the program of construction at the erection site as directed.

(4) The erecting engineer(s) shall instruct the Government's Representatives in the operation and maintenance features of the work by conducting training courses in accordance with SECTION 01600, paragraph 3.12.

H.9 U.S. ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1

This paragraph applies to contracts and purchase orders that require the contractor to comply with EM 385-1-1 (e.g., contracts that include the Accident Prevention clause at FAR 52.236-13 and/or other safety provisions). EM 385-1-1 and its changes are available at HTTP://www.hq.usace.army.mil (at the HQ homepage, select Safety and Occupational Health). The Contractor shall be responsible for complying with the current edition and all changes posted on the web as of the effective date of this solicitation.

CLAUSES INCORPORATED BY FULL TEXT

252.236-7001 CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

Title File Drawing No.

See Section J

(End of clause)

INCREMENTALLY-FUNDED CONTRACT

INCREMENTALLY-FUNDED CONTRACT

(a) The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

(b) This is an incrementally funded contract with funds being made available and obligated by the Bonneville Power Administration (BPA) to the Corps of Engineers (Corps) for obligation on this contract. Funds are not

available at the inception of this contract to cover the entire contract price. The sum of $10,000 has been obligated for the Detroit Dam transformer contract and is available for payment to the contractor during the current fiscal year. The sum of $30,000 has been obligated for the Libby Dam transformer contract and is available for payment to the contractor during the current fiscal year. The sum of $ 20,000 has been obligated for the Dworshak Dam transformer contract and is available for payment to the contractor during the current fiscal year. The sum of $ 20,000 has been obligated for the Little Goose Dam transformer contract and is available for payment to the contractor during the current fiscal year. The liability of the United States for payments under this contract is limited to the amount of funds currently obligated. The Government's liability for the difference between the contract price and the amount of funds obligated in this contract is dependent upon additional money being provided by BPA to the Corps. However, it is expected that additional funds will be provided by BPA to the Corps, up to the total contract price, in accordance with the Memorandum of Agreement (MOA) and Subagreement between the Corps and BPA The monies obligated on this contract are not, nor shall they be construed to be, general obligations of the United States, nor are such obligations intended to be or are they secured by the full faith and credit of the United States.

(c) Failure to make payments in excess of the amount currently obligated does not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (f) and (i) below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to obligate sufficient additional funds therefore.

(d) Contingent upon additional monies being provided by BPA to the Corps, the contracting officer may at any time obligate those funds for payments under this contract by issuing an administrative modification to the contract.

(e) Notification. If earnings will be such that funds obligated for the contract will be exhausted, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the contract during that fiscal year. This notice shall be given not less than 45 or more than 60 days prior to the estimated date of exhaustion.

(f) No payments will be made after exhaustion of funds obligated under the contract or any modification thereto. The contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

(g) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

(h) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

(i) If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to obligate sufficient additional funds to cover payments otherwise due, the contractor, by written notice delivered to the contracting officer at any time before such additional funds are obligated, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

(j) If at any time it becomes apparent that the funds obligated for any fiscal year are in excess of the funds required to meet all payments due or to become due the contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, by modification to the contract, to reduce said obligation by the amount of such excess.

(End of clause)

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Section I - Contract Clauses

CLAUSES INCORPORATED BY FULL TEXT

Successor Contracting Officers (52.201-4001)

The Contracting Officer who signed this contract is the primary Contracting Officer for the contract. Neverthless, any Contracting Officer acting within his/her authority may take formal action on this contract when a contract action needs to be taken and the primary Contracting Officer is unavailable.

52.202-1 DEFINITIONS (JUL 2004)

(a) When a solicitation provision or contract clause uses a word or term that is defined in the Federal Acquisition Regulation (FAR), the word or term has the same meaning as the definition in FAR 2.101 in effect at the time the solicitation was issued, unless--

(1) The solicitation, or amended solicitation, provides a different definition;

(2) The contracting parties agree to a different definition;

(3) The part, subpart, or section of the FAR where the provision or clause is prescribed provides a different meaning; or

(4) The word or term is defined in FAR Part 31, for use in the cost principles and procedures.

(b) The FAR Index is a guide to words and terms the FAR defines and shows where each definition is located. The FAR Index is available via the Internet at http://www.acqnet.gov at the end of the FAR, after the FAR Appendix.

(End of clause)

52.203-3 GRATUITIES (APR 1984)

(a) The right of the Contractor to proceed may be terminated by written notice if, after notice and hearing, the agency head or a designee determines that the Contractor, its agent, or another representative--

(1) Offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official, or employee of the Government; and

(2) Intended, by the gratuity, to obtain a contract or favorable treatment under a contract.

(b) The facts supporting this determination may be reviewed by any court having lawful jurisdiction.

(c) If this contract is terminated under paragraph (a) of this clause, the Government is entitled--

(1) To pursue the same remedies as in a breach of the contract; and

(2) In addition to any other damages provided by law, to exemplary damages of not less than 3 nor more than 10 times the cost incurred by the Contractor in giving gratuities to the person concerned, as determined by the agency head or a designee. (This subparagraph (c)(2) is applicable only if this contract uses money appropriated to the

Department of Defense.)

(d) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.203-5 COVENANT AGAINST CONTINGENT FEES (APR 1984)

(a) The Contractor warrants that no person or agency has been employed or retained to solicit or obtain this contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of the contingent fee.

(b) "Bona fide agency," as used in this clause, means an established commercial or selling agency, maintained by a contractor for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee," as used in this clause, means a person, employed by a contractor and subject to the contractor's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee," as used in this clause, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence," as used in this clause, means any influence that induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

(End of clause)

52.203-6 RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT (JUL 1995)

(a) Except as provided in (b) of this clause, the Contractor shall not enter into any agreement with an actual or prospective subcontractor, nor otherwise act in any manner, which has or may have the effect of restricting sales by such subcontractors directly to the Government of any item or process (including computer software) made or furnished by the subcontractor under this contract or under any follow-on production contract.

(b) The prohibition in (a) of this clause does not preclude the Contractor from asserting rights that are otherwise authorized by law or regulation.

(c) The Contractor agrees to incorporate the substance of this clause, including this paragraph (c), in all subcontracts under this contract which exceed $100,000.

52.203-7 ANTI-KICKBACK PROCEDURES. (JUL 1995)

(a) Definitions.

"Kickback," as used in this clause, means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor," as used in this clause, means a person who has entered into a prime contract with the United States.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than the prime Contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this clause, means any officer, partner, employee, or agent of a subcontractor.

(b) The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from -

(1) Providing or attempting to provide or offering to provide any kickback;

(2) Soliciting, accepting, or attempting to accept any kickback; or

(3) Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

(c)(1) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in paragraph (b) of this clause in its own operations and direct business relationships.

(2) When the Contractor has reasonable grounds to believe that a violation described in paragraph (b) of this clause may have occurred, the Contractor shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting agency, the head of the contracting agency if the agency does not have an inspector general, or the Department of Justice.

(3) The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph (b) of this clause.

(4) The Contracting Officer may (i) offset the amount of the kickback against any monies owed by the United States under the prime contract and/or (ii) direct that the Prime Contractor withhold, from sums owed a subcontractor under the prime contract, the amount of any kickback. The Contracting Officer may order the monies withheld under

subdivision (c)(4)(ii) of this clause be paid over to the Government unless the Government has already offset those monies under subdivision (c)(4)(i) of this clause. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

(5) The Contractor agrees to incorporate the substance of this clause, including this subparagraph (c)(5) but excepting subparagraph (c)(1), in all subcontracts under this contract which exceed $100,000.

52.203-8 CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) If the Government receives information that a contractor or a person has engaged in conduct constituting a violation of subsection (a), (b), (c), or (d) of Section 27 of the Office of Federal Procurement Policy Act (41 U.S.C. 423) (the Act), as amended by section 4304 of the 1996 National Defense Authorization Act for Fiscal Year 1996 (Pub. L. 104-106), the Government may--

(1) Cancel the solicitation, if the contract has not yet been awarded or issued; or

(2) Rescind the contract with respect to which--

(i) The Contractor or someone acting for the Contractor has been convicted for an offense where the conduct constitutes a violation of subsection 27(a) or (b) of the Act for the purpose of either--

(A) Exchanging the information covered by such subsections for anything of value; or

(B) Obtaining or giving anyone a competitive advantage in the award of a Federal agency procurement contract; or

(ii) The head of the contracting activity has determined, based upon a preponderance of the evidence, that the Contractor or someone acting for the Contractor has engaged in conduct constituting an offense punishable under subsections 27(e)(1) of the Act.

(b) If the Government rescinds the contract under paragraph (a) of this clause, the Government is entitled to recover, in addition to any penalty prescribed by law, the amount expended under the contract.

(c) The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law, regulation, or under this contract.

(End of clause)

52.203-10 PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) The Government, at its election, may reduce the price of a fixed-price type contract and the total cost and fee under a cost-type contract by the amount of profit or fee determined as set forth in paragraph (b) of this clause if the head of the contracting activity or designee determines that there was a violation of subsection 27 (a), (b), or (c) of the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 423), as implemented in section 3.104 of the Federal Acquisition Regulation.

(b) The price or fee reduction referred to in paragraph (a) of this clause shall be--

(1) For cost-plus-fixed-fee contracts, the amount of the fee specified in the contract at the time of award;

(2) For cost-plus-incentive-fee contracts, the target fee specified in the contract at the time of award, notwithstanding any minimum fee or "fee floor" specified in the contract;

(3) For cost-plus-award-fee contracts--

(i) The base fee established in the contract at the time of contract award;

(ii) If no base fee is specified in the contract, 30 percent of the amount of each award fee otherwise payable to the Contractor for each award fee evaluation period or at each award fee determination point.

(4) For fixed-price-incentive contracts, the Government may--

(i) Reduce the contract target price and contract target profit both by an amount equal to the initial target profit specified in the contract at the time of contract award; or

(ii) If an immediate adjustment to the contract target price and contract target profit would have a significant adverse impact on the incentive price revision relationship under the contract, or adversely affect the contract financing provisions, the Contracting Officer may defer such adjustment until establishment of the total final price of the contract. The total final price established in accordance with the incentive price revision provisions of the contract shall be reduced by an amount equal to the initial target profit specified in the contract at the time of contract award and such reduced price shall be the total final contract price.

(5) For firm-fixed-price contracts, by 10 percent of the initial contract price or a profit amount determined by the Contracting Officer from records or documents in existence prior to the date of the contract award.

(c) The Government may, at its election, reduce a prime contractor's price or fee in accordance with the procedures of paragraph (b) of this clause for violations of the Act by its subcontractors by an amount not to exceed the amount of profit or fee reflected in the subcontract at the time the subcontract was first definitively priced.

(d) In addition to the remedies in paragraphs (a) and (c) of this clause, the Government may terminate this contract for default. The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.203-12 LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (JUN 2003)

(a) Definitions.

"Agency," as used in this clause, means executive agency as defined in 2.101.

"Covered Federal action," as used in this clause, means any of the following Federal actions:

(1) The awarding of any Federal contract.

(2) The making of any Federal grant.

(3) The making of any Federal loan.

(4) The entering into of any cooperative agreement.

(5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

(1) An individual who is appointed to a position in the Government under Title 5, United States Code, including a position under a temporary appointment.

(2) A member of the uniformed services, as defined in subsection 101(3),Title 37, United States Code.

(3) A special Government employee, as defined in section 202, Title 18, United States Code.

(4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, Title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

State, as used in this clause, means a State of the United States, the District of Columbia, or an outlying area of the United States, an agency or instrumentality of a State, and multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions.

(1) Section 1352 of Title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b)(3)(i)(A) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

(C) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action--

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those services expressly authorized by subdivision (b)(3)(i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3)(ii)(A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b)(3)(ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(c) Disclosure.

(1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes--

(i) A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(ii) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(iii) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding $100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(d) Agreement. The Contractor agrees not to make any payment prohibited by this clause.

(e) Penalties.

(1) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(f) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provision.

(End of clause)

52.204-4 PRINTED OR COPIED DOUBLE-SIDED ON RECYCLED PAPER (AUG 2000)

(a) Definitions. As used in this clause--

“Postconsumer material” means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. Postconsumer material is a part of the broader category of “recovered material.” For paper and paper products, postconsumer material means “postconsumer fiber” defined by the U.S. Environmental Protection Agency (EPA) as--

(1) Paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; or

(2) All paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste; but not

(3) Fiber derived from printers' over-runs, converters' scrap, and over-issue publications.

“Printed or copied double-sided” means printing or reproducing a document so that information is on both sides of a sheet of paper.

“Recovered material,” for paper and paper products, is defined by EPA in its Comprehensive Procurement Guideline as “recovered fiber” and means the following materials:

(1) Postconsumer fiber; and

(2) Manufacturing wastes such as--

(i) Dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including: envelope cuttings, bindery trimmings, and other paper and paperboard waste resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and

(ii) Repulped finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others.

(b) In accordance with Section 101 of Executive Order 13101 of September 14, 1998, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, the Contractor is encouraged to submit paper documents, such as offers, letters, or reports, that are printed or copied double-sided on recycled paper that meet minimum content standards specified in Section 505 of Executive Order 13101, when not using electronic commerce methods to submit information or data to the Government.

(c) If the Contractor cannot purchase high-speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, white wove envelopes, writing and office paper, book paper, cotton fiber paper, and cover stock meeting the 30 percent postconsumer material standard for use in submitting paper documents to the Government, it should use paper containing no less than 20 percent postconsumer material. This lesser standard should be used only when paper meeting the 30 percent postconsumer material standard is not obtainable at a reasonable price or does not meet reasonable performance standards.

(End of clause)

52.204-7 CENTRAL CONTRACTOR REGISTRATION (OCT 2003)

(a) Definitions. As used in this clause--

Central Contractor Registration (CCR) database means the primary Government repository for Contractor information required for the conduct of business with the Government.

Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see the FAR at Subpart 32.11) for the same parent concern.

Registered in the CCR database means that--

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database; and

(2) The Government has validated all mandatory data fields and has marked the record “Active”.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation “DUNS” or “DUNS +4” followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number--

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date

of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g)(1)(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at http://www.ccr.gov or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (JAN 2005)

(a) The Government suspends or debars Contractors to protect the Government's interests. The Contractor shall not enter into any subcontract in excess of the $25,000 with a Contractor that is debarred, suspended, or proposed for debarment unless there is a compelling reason to do so.

(b) The Contractor shall require each proposed first-tier subcontractor, whose subcontract will exceed $25,000, to disclose to the Contractor, in writing, whether as of the time of award of the subcontract, the subcontractor, or its principles, is or is not debarred, suspended, or proposed for debarment by the Federal Government.

(c) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the in the Excluded Parties List System). The notice must include the following:

(1) The name of the subcontractor.

(2) The Contractor's knowledge of the reasons for the subcontractor being in the Excluded Parties List System.

(3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion in the Excluded Parties List System.

(4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.

(End of clause)

52.211-5 MATERIAL REQUIREMENTS (AUG 2000)

(a) Definitions.

As used in this clause--

New means composed of previously unused components, whether manufactured from virgin material, recovered material in the form of raw material, or materials and by-products generated from, and reused within, an original manufacturing process; provided that the supplies meet contract requirements, including but not limited to, performance, reliability, and life expectancy.

Reconditioned means restored to the original normal operating condition by readjustments and material replacement.

Recovered material means waste materials and by-products recovered or diverted from solid waste, but the term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.

Remanufactured means factory rebuilt to original specifications.

Virgin material means--

(1) Previously unused raw material, including previously unused copper, aluminum, lead, zinc, iron, other metal or metal ore; or

(2) Any undeveloped resource that is, or with new technology will become, a source of raw materials.

(b) Unless this contract otherwise requires virgin material or supplies composed of or manufactured from virgin material, the Contractor shall provide supplies that are new, reconditioned, or remanufactured, as defined in this clause.

(c) A proposal to provide unused former Government surplus property shall include a complete description of the material, the quantity, the name of the Government agency from which acquired, and the date of acquisition.

(d) A proposal to provide used, reconditioned, or remanufactured supplies shall include a detailed description of such supplies and shall be submitted to the Contracting Officer for approval.

(e) Used, reconditioned, or remanufactured supplies, or unused former Government surplus property, may be used in contract performance if the Contractor has proposed the use of such supplies, and the Contracting Officer has authorized their use.

(End of clause)

52.215-2 AUDIT AND RECORDS--NEGOTIATION (JUN 1999)

(a) As used in this clause, "records" includes books, documents, accounting procedures and practices, and other data, regardless of type and regardless of whether such items are in written form, in the form of computer data, or in any other form.

(b) Examination of costs. If this is a cost-reimbursement, incentive, time-and-materials, labor-hour, or price redeterminable contract, or any combination of these, the Contractor shall maintain and the Contracting Officer, or an authorized representative of the Contracting Officer, shall have the right to examine and audit all records and other evidence sufficient to reflect properly all costs claimed to have been incurred or anticipated to be incurred directly or indirectly in performance of this contract. This right of examination shall include inspection at all reasonable times of the Contractor's plants, or parts of them, engaged in performing the contract.

(c) Cost or pricing data. If the Contractor has been required to submit cost or pricing data in connection with any pricing action relating to this contract, the Contracting Officer, or an authorized representative of the Contracting Officer, in order to evaluate the accuracy, completeness, and currency of the cost or pricing data, shall have the right to examine and audit all of the Contractor's records, including computations and projections, related to--

(1) The proposal for the contract, subcontract, or modification;

(2) The discussions conducted on the proposal(s), including those related to negotiating;

(3) Pricing of the contract, subcontract, or modification; or

(4) Performance of the contract, subcontract or modification.

(d) Comptroller General--(1) The Comptroller General of the United States, or an authorized representative, shall have access to and the right to examine any of the Contractor's directly pertinent records involving transactions related to this contract or a subcontract hereunder.

(2) This paragraph may not be construed to require the Contractor or subcontractor to create or maintain any record that the Contractor or subcontractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) Reports. If the Contractor is required to furnish cost, funding, or performance reports, the Contracting Officer or an authorized representative of the Contracting Officer shall have the right to examine and audit the supporting records and materials, for the purpose of evaluating (1) the effectiveness of the Contractor's policies and procedures to produce data compatible with the objectives of these reports and (2) the data reported.

(f) Availability. The Contractor shall make available at its office at all reasonable times the records, materials, and other evidence described in paragraphs (a), (b), (c), (d), and (e) of this clause, for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in Subpart 4.7, Contractor Records Retention, of the Federal Acquisition Regulation (FAR), or for any longer period required by statute or by other clauses of this contract. In addition--

(1) If this contract is completely or partially terminated, the Contractor shall make available the records relating to the work terminated until 3 years after any resulting final termination settlement; and

(2) The Contractor shall make available records relating to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to this contract until such appeals, litigation, or claims are finally resolved.

(g) The Contractor shall insert a clause containing all the terms of this clause, including this paragraph (g), in all subcontracts under this contract that exceed the simplified acquisition threshold, and--

(1) That are cost-reimbursement, incentive, time-and-materials, labor-hour, or price-redeterminable type or any combination of these;

(2) For which cost or pricing data are required; or

(3) That require the subcontractor to furnish reports as discussed in paragraph (e) of this clause.

The clause may be altered only as necessary to identify properly the contracting parties and the Contracting Officer under the Government prime contract.

(End of clause)

52.215-8 ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT (OCT 1997)

Any inconsistency in this solicitation or contract shall be resolved by giving precedence in the following order:

(a) The Schedule (excluding the specifications).

(b) Representations and other instructions.

(c) Contract clauses.

(d) Other documents, exhibits, and attachments.

(e) The specifications.

(End of clause)

52.215-11 PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA--MODIFICATIONS (OCT 1997)

(a) This clause shall become operative only for any modification to this contract involving a pricing adjustment expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4, except that this clause does not apply to any modification if an exception under FAR 15.403-1 applies.

(b) If any price, including profit or fee, negotiated in connection with any modification under this clause, or any cost reimbursable under this contract, was increased by any significant amount because (1) the Contractor or a subcontractor furnished cost or pricing data that were not complete, accurate, and current as certified in its Certificate of Current Cost or Pricing Data, (2) a subcontractor or prospective subcontractor furnished the Contractor cost or pricing data that were not complete, accurate, and current as certified in the Contractor's Certificate of Current Cost or Pricing Data, or (3) any of these parties furnished data of any description that were not accurate, the price or cost shall be reduced accordingly and the contract shall be modified to reflect the reduction. This right to a price reduction is limited to that resulting from defects in data relating to modifications for which this clause becomes operative under paragraph (a) of this clause.

(c) Any reduction in the contract price under paragraph (b) of this clause due to defective data from a prospective subcontractor that was not subsequently awarded the subcontract shall be limited to the amount, plus applicable overhead and profit markup, by which--

(1) The actual subcontract; or

(2) The actual cost to the Contractor, if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor; provided, that the actual subcontract price was not itself affected by defective cost or pricing data.

(d)(1) If the Contracting Officer determines under paragraph (b) of this clause that a price or cost reduction should be made, the Contractor agrees not to raise the following matters as a defense:

(i) The Contractor or subcontractor was a sole source supplier or otherwise was in a superior bargaining position and thus the price of the contract would not have been modified even if accurate, complete, and current cost or pricing data had been submitted.

(ii) The Contracting Officer should have known that the cost or pricing data in issue were defective even though the Contractor or subcontractor took no affirmative action to bring the character of the data to the attention of the Contracting Officer.

(iii) The contract was based on an agreement about the total cost of the contract and there was no agreement about the cost of each item procured under the contract.

(iv) The Contractor or subcontractor did not submit a Certificate of Current Cost or Pricing Data.

(2)(i) Except as prohibited by subdivision (d)(2)(ii) of this clause, an offset in an amount determined appropriate by the Contracting Officer based upon the facts shall be allowed against the amount of a contract price reduction if--

(A) The Contractor certifies to the Contracting Officer that, to the best of the Contractor's knowledge and belief, the Contractor is entitled to the offset in the amount requested; and

(B) The Contractor proves that the cost or pricing data were available before the “as of” date specified on its Certificate of Current Cost or Pricing Data, and that the data were not submitted before such date.

(ii) An offset shall not be allowed if--

(A) The understated data were known by the Contractor to be understated before the “as of” date specified on its Certificate of Current Cost or Pricing Data; or

(B) The Government proves that the facts demonstrate that the contract price would not have increased in the amount to be offset even if the available data had been submitted before the “as of” date specified on its Certificate of Current Cost or Pricing Data.

(e) If any reduction in the contract price under this clause reduces the price of items for which payment was made prior to the date of the modification reflecting the price reduction, the Contractor shall be liable to and shall pay the United States at the time such overpayment is repaid--

(1) Simple interest on the amount of such overpayment to be computed from the date(s) of overpayment to the Contractor to the date the Government is repaid by the Contractor at the applicable underpayment rate effective for each quarter prescribed by the Secretary of the Treasury under 26 U.S.C. 6621(a)(2); and

A penalty equal to the amount of the overpayment, if the Contractor or subcontractor knowingly submitted cost or pricing data that were incomplete, inaccurate, or noncurrent.

(End of clause)

(a) The requirements of paragraphs (b) and (c) of this clause shall--

(1) Become operative only for any modification to this contract involving a pricing adjustment expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4; and

(2) Be limited to such modifications.

(b) Before awarding any subcontract expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4, on the date of agreement on price or the date of award, whichever is later; or before pricing any subcontract modification involving a pricing adjustment expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4, the Contractor shall require the subcontractor to submit cost or pricing data (actually or by specific identification in writing), unless an exception under FAR 15.403-1 applies.

(c) The Contractor shall require the subcontractor to certify in substantially the form prescribed in FAR 15.406-2 that, to the best of its knowledge and belief, the data submitted under paragraph (b) of this clause were accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract modification.

The Contractor shall insert the substance of this clause, including this paragraph (d), in each subcontract that exceeds the threshold for submission of cost or pricing data at FAR 15.403-4 on the date of agreement on price or the date of award, whichever is later.

(End of clause)

52.215-14 INTEGRITY OF UNIT PRICES (OCT 1997)

(a) Any proposal submitted for the negotiation of prices for items of supplies shall distribute costs within contracts on a basis that ensures that unit prices are in proportion to the items' base cost (e.g., manufacturing or acquisition costs). Any method of distributing costs to line items that distorts unit prices shall not be used. For example, distributing costs equally among line items is not acceptable except when there is little or no variation in base cost. Nothing in this paragraph requires submission of cost or pricing data not otherwise required by law or regulation.

(b) When requested by the Contracting Officer, the Offeror/Contractor shall also identify those supplies that it will not manufacture or to which it will not contribute significant value.

The Contractor shall insert the substance of this clause, less paragraph (b), in all subcontracts for other than: acquisitions at or below the simplified acquisition threshold in FAR Part 2; construction or architect-engineer services under FAR Part 36; utility services under FAR Part 41; services where supplies are not required; commercial items; and petroleum products.

(End of clause)

52.215-19 NOTIFICATION OF OWNERSHIP CHANGES (OCT 1997)

(a) The Contractor shall make the following notifications in writing:

(1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.

(2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

(b) The Contractor shall--

(1) Maintain current, accurate, and complete inventory records of assets and their costs;

(2) Provide the ACO or designated representative ready access to the records upon request;

(3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and

(4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

(End of clause)

52.215-21 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA--MODIFICATIONS (OCT 1997)

(a) Exceptions from cost or pricing data. (1) In lieu of submitting cost or pricing data for modifications under this contract, for price adjustments expected to exceed the threshold set forth at FAR 15.403-4 on the date of the agreement on price or the date of the award, whichever is later, the Contractor may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable--

(i) Identification of the law or regulation establishing the price offered. If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) Information on modifications of contracts or subcontracts for commercial items. (A) If--

(1) The original contract or subcontract was granted an exception from cost or pricing data requirements because the price agreed upon was based on adequate price competition or prices set by law or regulation, or was a contract or subcontract for the acquisition of a commercial item; and

(2) The modification (to the contract or subcontract) is not exempted based on one of these exceptions, then the Contractor may provide information to establish that the modification would not change the contract or subcontract from a contract or subcontract for the acquisition of a commercial item to a contract or subcontract for the acquisition of an item other than a commercial item.

(B) For a commercial item exception, the Contractor shall provide, at a minimum, information on prices at which the same item or similar items have previously been sold that is adequate for evaluating the reasonableness of the price of the modification. Such information may include--

(1) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original

equipment manufacturer, or reseller. Also explain the basis of each offered price and its relationship to the established catalog price, including how the proposed price relates to the price of recent sales in quantities similar to the proposed quantities.

(2) For market-priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market.

(3) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.

(2) The Contractor grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this clause, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation , access does not extend to cost or profit information or other data relevant solely to the Contractor's determination of the prices to be offered in the catalog or marketplace.

(b) Requirements for cost or pricing data. If the Contractor is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The Contractor shall submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

As soon as practicable after agreement on price, but before award (except for unpriced actions), the Contractor shall submit a Certificate of Current Cost or Pricing Data, as prescribed by FAR 15.406-2.

(End of clause)

52.219-4 NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (OCT 2004)

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) Evaluation preference. (1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except--

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference;

(ii) Otherwise successful offers from small business concerns;

(iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and

(iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.

(2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.

(3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged

business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer.

These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.

(c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.

___ Offeror elects to waive the evaluation preference.

(d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

(e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants.

(f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

52.219-8 UTILIZATION OF SMALL BUSINESS CONCERNS (MAY 2004)

(a) It is the policy of the United States that small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns shall have the maximum practicable opportunity to participate in performing contracts let by any Federal agency, including contracts and subcontracts for subsystems, assemblies, components, and related services for major systems. It is further the policy of the United States that its prime contractors establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns.

(b) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Contractor's compliance with this clause.

Definitions. As used in this contract--

HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

Small business concern means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

Small disadvantaged business concern means a small business concern that represents, as part of its offer that--

(1) It has received certification as a small disadvantaged business concern consistent with 13 CFR part 124, subpart B;

(2) No material change in disadvantaged ownership and control has occurred since its certification;

(3) Where the concern is owned by one or more individuals, the net worth of each individual upon whom the certification is based does not exceed $750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(4) It is identified, on the date of its representation, as a certified small disadvantaged business in the database maintained by the Small Business Administration (PRO-Net).

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

Women-owned small business concern means a small business concern--

(1) That is at least 51 percent owned by one or more women, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as a small business concern, a veteran-owned small business concern, a service-disabled veteran-owned small business concern, a HUBZone small business concern, a small disadvantaged business concern, or a women-owned small business concern.

(End of clause)

52.219-9 SMALL BUSINESS SUBCONTRACTING PLAN (JAN 2002)

(a) This clause does not apply to small business concerns.

(b) Definitions. As used in this clause--

Commercial item means a product or service that satisfies the definition of commercial item in section 2.101 of the Federal Acquisition Regulation.

Commercial plan means a subcontracting plan (including goals) that covers the offeror's fiscal year and that applies to the entire production of commercial items sold by either the entire company or a portion thereof (e.g., division, plant, or product line).

Individual contract plan means a subcontracting plan that covers the entire contract period (including option periods), applies to a specific contract, and has goals that are based on the offeror's planned subcontracting in support of the specific contract, except that indirect costs incurred for common or joint purposes may be allocated on a prorated basis to the contract.

Master plan means a subcontracting plan that contains all the required elements of an individual contract plan, except goals, and may be incorporated into individual contract plans, provided the master plan has been approved.

Subcontract means any agreement (other than one involving an employer-employee relationship) entered into by a Federal Government prime Contractor or subcontractor calling for supplies or services required for performance of the contract or subcontract.

(c) The offeror, upon request by the Contracting Officer, shall submit and negotiate a subcontracting plan, where applicable, that separately addresses subcontracting with small business, veteran-owned small business, HUBZone small business concerns, small disadvantaged business, and women-owned small business concerns. If the offeror is submitting an individual contract plan, the plan must separately address subcontracting with small business, veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns, with a separate part for the basic contract and separate parts for each option (if any). The plan shall be included in and made a part of the resultant contract. The subcontracting plan shall be negotiated within the time specified by the Contracting Officer. Failure to submit and negotiate the subcontracting plan shall make the offeror ineligible for award of a contract.

(d) The offeror's subcontracting plan shall include the following:

(1) Goals, expressed in terms of percentages of total planned subcontracting dollars, for the use of small business, veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns as subcontractors. The offeror shall include all subcontracts that contribute to contract performance, and may include a proportionate share of products and services that are normally allocated as indirect costs.

(2) A statement of--

(i) Total dollars planned to be subcontracted for an individual contract plan; or the offeror's total projected sales, expressed in dollars, and the total value of projected subcontracts to support the sales for a commercial plan;

(ii) Total dollars planned to be subcontracted to small business concerns;

(iii) Total dollars planned to be subcontracted to veteran-owned small business concerns;

(iv) Total dollars planned to be subcontracted to HUBZone small business concerns;

(v) Total dollars planned to be subcontracted to small disadvantaged business concerns; and

(vi) Total dollars planned to be subcontracted to women-owned small business concerns.

(3) A description of the principal types of supplies and services to be subcontracted, and an identification of the types planned for subcontracting to--

(i) Small business concerns;

(ii) Veteran-owned small business concerns;

(iii) HUBZone small business concerns;

(iv) Small disadvantaged business concerns; and

(v) Women-owned small business concerns.

(4) A description of the method used to develop the subcontracting goals in paragraph (d)(1) of this clause.

(5) A description of the method used to identify potential sources for solicitation purposes (e.g., existing company source lists, the Procurement Marketing and Access Network (PRO-Net) of the Small Business Administration (SBA), veterans service organizations, the National Minority Purchasing Council Vendor Information Service, the Research and Information Division of the Minority Business Development Agency in the Department of Commerce, or small, HUBZone, small disadvantaged, and women-owned small business trade associations). A firm may rely on the information contained in PRO-Net as an accurate representation of a concern's size and ownership characteristics for the purposes of maintaining a small, veteran-owned small, HUBZone small, small disadvantaged, and women-owned small business source list. Use of PRO-Net as its source list does not relieve a firm of its responsibilities (e.g., outreach, assistance, counseling, or publicizing subcontracting opportunities) in this clause.

(6) A statement as to whether or not the offeror in included indirect costs in establishing subcontracting goals, and a description of the method used to determine the proportionate share of indirect costs to be incurred with—

(i) Small business concerns;

(ii) Veteran-owned small business concerns;

(iii) HUBZone small business concerns;

(iv) Small disadvantaged business concerns; and

(v) Women-owned small business concerns.

(7) The name of the individual employed by the offeror who will administer the offeror's subcontracting program, and a description of the duties of the individual.

(8) A description of the efforts the offeror will make to assure that small business, veteran-owned small business, HUBZone small business, small disadvantaged business and women-owned small business concerns have an equitable opportunity to compete for subcontracts.

(9) Assurances that the offeror will include the clause of this contract entitled ``Utilization of Small Business Concerns'' in all subcontracts that offer further subcontracting opportunities, and that the offeror will require all subcontractors (except small business concerns) that receive subcontracts in excess of $500,000 ($1,000,000 for construction of any public facility) to adopt a subcontracting plan that complies with the requirements of this clause.

(10) Assurances that the offeror will--

(i) Cooperate in any studies or surveys as may be required;

(ii) Submit periodic reports so that the Government can determine the extent of compliance by the offeror with the subcontracting plan;

(iii) Submit Standard Form (SF) 294, Subcontracting Report for Individual Contracts, and/or SF 295, Summary Subcontract Report, in accordance with paragraph (j) of this clause. The reports shall provide information on subcontract awards to small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, small disadvantaged business concerns, women-owned small business concerns, and Historically Black Colleges and Universities and Minority Institutions. Reporting shall be in accordance with the instructions on the forms or as provided in agency regulations.

(iv) Ensure that its subcontractors agree to submit SF 294 and SF 295.

(11) A description of the types of records that will be maintained concerning procedures that have been adopted to comply with the requirements and goals in the plan, including establishing source lists; and a description of the offeror's efforts to locate small business, veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns and award subcontracts to them. The records shall include at least the following (on a plant-wide or company-wide basis, unless otherwise indicated)

(i) Source lists (e.g., PRO-Net), guides, and other data that identify small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns.

(ii) Organizations contacted in an attempt to locate sources that are small business, veteran-owned small business, HUBZone small business, small disadvantaged business, or women-owned small business concerns.

(iii) Records on each subcontract solicitation resulting in an award of more than $100,000, indicating--

(A) Whether small business concerns were solicited and, if not, why not;

(B) Whether veteran-owned small business concerns were solicited and, if not, why not;

(C) Whether HUBZone small business concerns were solicited and, if not, why not;

(D) Whether small disadvantaged business concerns were solicited and, if not, why not;

(E) Whether women-owned small business concerns were solicited and, if not, why not; and

(F) If applicable, the reason award was not made to a small business concern.

(iv) Records of any outreach efforts to contact--

(A) Trade associations;

(B) Business development organizations;

(C) Conferences and trade fairs to locate small, HUBZone small, small disadvantaged, and women-owned small business sources; and

(D) Veterans service organizations.

(v) Records of internal guidance and encouragement provided to buyers through--

(A) Workshops, seminars, training, etc.; and

(B) Monitoring performance to evaluate compliance with the program's requirements.

(vi) On a contract-by-contract basis, records to support award data submitted by the offeror to the Government, including the name, address, and business size of each subcontractor. Contractors having commercial plans need not comply with this requirement.

(e) In order to effectively implement this plan to the extent consistent with efficient contract performance, the Contractor shall perform the following functions:

(1) Assist small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation by such concerns. Where the Contractor's lists of potential small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business subcontractors are excessively long, reasonable effort shall be made to give all such small business concerns an opportunity to compete over a period of time.

(2) Provide adequate and timely consideration of the potentialities of small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns in all ``make-or-buy'' decisions.

(3) Counsel and discuss subcontracting opportunities with representatives of small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business firms.

(4) Provide notice to subcontractors concerning penalties and remedies for misrepresentations of business status as small, veteran-owner small business, HUBZone small, small disadvantaged, or women-owned small business for the purpose of obtaining a subcontract that is to be included as part or all of a goal contained in the Contractor's subcontracting plan.

(f) A master plan on a plant or division-wide basis that contains all the elements required by paragraph (d) of this clause, except goals, may be incorporated by reference as a part of the subcontracting plan required of the offeror by this clause; provided--
(1) the master plan has been approved, (2) the offeror ensures that the master plan is updated as necessary and provides copies of the approved master plan, including evidence of its approval, to the Contracting Officer, and (3) goals and any deviations from the master plan deemed necessary by the Contracting Officer to satisfy the requirements of this contract are set forth in the individual subcontracting plan.

(g) A commercial plan is the preferred type of subcontracting plan for contractors furnishing commercial items. The commercial plan shall relate to the offeror's planned subcontracting generally, for both commercial and Government business, rather than solely to the Government contract. Commercial plans are also preferred for subcontractors that provide commercial items under a prime contract, whether or not the prime contractor is supplying a commercial item.

(h) Prior compliance of the offeror with other such subcontracting plans under previous contracts will be considered by the Contracting Officer in determining the responsibility of the offeror for award of the contract.

(i) The failure of the Contractor or subcontractor to comply in good faith with (1) the clause of this contract entitled "Utilization Of Small Business Concerns," or (2) an approved plan required by this clause, shall be a material breach of the contract.

(j) The Contractor shall submit the following reports:

(1) Standard Form 294, Subcontracting Report for Individual Contracts. This report shall be submitted to the Contracting Officer semiannually and at contract completion. The report covers subcontract award data related to this contract. This report is not required for commercial plans.

(2) Standard Form 295, Summary Subcontract Report. This report encompasses all of the contracts with the awarding agency. It must be submitted semi-annually for contracts with the Department of Defense and annually for contracts with civilian agencies. If the reporting activity is covered by a commercial plan, the reporting activity must report annually all subcontract awards under that plan. All reports submitted at the close of each fiscal year (both individual and commercial plans) shall include a breakout, in the Contractor's format, of subcontract awards, in whole dollars, to small disadvantaged business concerns by North American Industry Classification System (NAICS) Industry Subsector. For a commercial plan, the Contractor may obtain from each of its subcontractors a predominant NAICS Industry Subsector and report all awards to that subcontractor under its predominant NAICS Industry Subsector.

(End of clause)

52.219-16 LIQUIDATED DAMAGES-SUBCONTRACTING PLAN (JAN 1999)

(a) Failure to make a good faith effort to comply with the subcontracting plan, as used in this clause, means a willful or intentional failure to perform in accordance with the requirements of the subcontracting plan approved under the clause in this contract entitled "Small Business Subcontracting Plan," or willful or intentional action to frustrate the plan.

(b) Performance shall be measured by applying the percentage goals to the total actual subcontracting dollars or, if a commercial plan is involved, to the pro rata share of actual subcontracting dollars attributable to Government contracts covered by the commercial plan. If, at contract completion or, in the case of a commercial plan, at the close of the fiscal year for which the plan is applicable, the Contractor has failed to meet its subcontracting goals and the Contracting Officer decides in accordance with paragraph (c) of this clause that the Contractor failed to make a good faith effort to comply with its subcontracting plan, established in accordance with the clause in this contract entitled “Small Business Subcontracting Plan,” the Contractor shall pay the Government liquidated damages in an amount stated. The amount of probable damages attributable to the Contractor's failure to comply shall be an amount equal to the actual dollar amount by which the Contractor failed to achieve each subcontract goal.

(c) Before the Contracting Officer makes a final decision that the Contractor has failed to make such good faith effort, the Contracting Officer shall give the Contractor written notice specifying the failure and permitting the Contractor to demonstrate what good faith efforts have been made and to discuss the matter. Failure to respond to the notice may be taken as an admission that no valid explanation exists. If, after consideration of all the pertinent data, the Contracting Officer finds that the Contractor failed to make a good faith effort to comply with the subcontracting plan, the Contracting Officer shall issue a final decision to that effect and require that the Contractor pay the Government liquidated damages as provided in paragraph (b) of this clause.

(d) With respect to commercial plans, the Contracting Officer who approved the plan will perform the functions of the Contracting Officer under this clause on behalf of all agencies with contracts covered by the commercial plan.

(e) The Contractor shall have the right of appeal, under the clause in this contract entitled Disputes, from any final decision of the Contracting Officer.

(f) Liquidated damages shall be in addition to any other remedies that the Government may have.

(End of clause)

52.222-19 CHILD LABOR--COOPERATION WITH AUTHORITIES AND REMEDIES (JUN 2004)

(a) Applicability. This clause does not apply to the extent that the Contractor is supplying end products mined, produced, or manufactured in--

(1) Canada, and the anticipated value of the acquisition is $25,000 or more;

(2) Israel, and the anticipated value of the acquisition is $50,000 or more;

(3) Mexico, and the anticipated value of the acquisition is $58,550 or more; or

(4) Aruba, Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, or the United Kingdom and the anticipated value of the acquisition is $175,000 or more.

(b) Cooperation with Authorities. To enforce the laws prohibiting the manufacture or importation of products mined, produced, or manufactured by forced or indentured child labor, authorized officials may need to conduct investigations to determine whether forced or indentured child labor was used to mine, produce, or manufacture any product furnished under this contract. If the solicitation includes the provision 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products, or the equivalent at 2.212-3(i), the Contractor agrees to cooperate fully with authorized officials of the contracting agency, the Department of the Treasury, or the Department of Justice by providing reasonable access to records, documents, persons, or premises upon reasonable request by the authorized officials.

(c) Violations. The Government may impose remedies set forth in paragraph (d) for the following violations:

(1) The Contractor has submitted a false certification regarding knowledge of the use of forced or indentured child labor for listed end products.

(2) The Contractor has failed to cooperate, if required, in accordance with paragraph (b) of this clause, with an investigation of the use of forced or indentured child labor by an Inspector General, Attorney General, or the Secretary of the Treasury.

(3) The Contractor uses forced or indentured child labor in its mining, production, or manufacturing processes.

(4) The Contractor has furnished under the contract end products or components that have been mined, produced, or manufactured wholly or in part by forced or indentured child labor. (The Government will not pursue remedies at paragraph (d)(2) or paragraph (d)(3) of this clause unless sufficient evidence indicates that the Contractor knew of the violation.)

(d) Remedies. (1) The Contracting Officer may terminate the contract.

(2) The suspending official may suspend the Contractor in accordance with procedures in FAR Subpart 9.4.

(3) The debarring official may debar the Contractor for a period not to exceed 3 years in accordance with the procedures in FAR Subpart 9.4.

(End of clause)

52.222-20 WALSH-HEALEY PUBLIC CONTRACTS ACT (DEC 1996)

If this contract is for the manufacture or furnishing of materials, supplies, articles or equipment in an amount that exceeds or may exceed $10,000, and is subject to the Walsh-Healey Public Contracts Act, as amended (41 U.S.C. 35-45), the following terms and conditions apply:

(a) All stipulations required by the Act and regulations issued by the Secretary of Labor (41 CFR Chapter 50) are incorporated by reference. These stipulations are subject to all applicable rulings and interpretations of the Secretary of Labor that are now, or may hereafter, be in effect.

(b) All employees whose work relates to this contract shall be paid not less than the minimum wage prescribed by regulations issued by the Secretary of Labor (41 CFR 50-202.2). Learners, student learners, apprentices, and handicapped workers may be employed at less than the prescribed minimum wage (see 41 CFR 50-202.3) to the same extent that such employment is permitted under Section 14 of the Fair Labor Standards Act (41 U.S.C. 40).

(End of clause)

52.222-21 PROHIBITION OF SEGREGATED FACILITIES (FEB 1999)

(a) Segregated facilities, as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(b) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

(End of clause)

52.222-26 EQUAL OPPORTUNITY (APR 2002)

(a) Definition. United States, as used in this clause, means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.

(b) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of

$10,000, the Contractor shall comply with paragraphs (b)(1) through (b)(11) of this clause, except for work performed outside the United States by employees who were not recruited within the United States. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.

(1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. However, it shall not be a violation of this clause for the Contractor to extend a publicly announced preference in employment to Indians living on or near an Indian reservation, in connection with employment opportunities on or near an Indian reservation, as permitted by 41 CFR 60-1.5.

(2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.

(3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(4) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. The Contractor shall also file Standard Form 100 (EEO-1), or any successor form, as prescribed in 41 CFR part 60-1. Unless the Contractor has filed within the 12 months preceding the date of contract award, the Contractor shall, within 30 days after contract award, apply to either the regional Office of Federal Contract Compliance Programs (OFCCP) or the local office of the Equal Employment Opportunity Commission for the necessary forms.

(8) The Contractor shall permit access to its premises, during normal business hours, by the contracting agency or the OFCCP for the purpose of conducting on-site compliance evaluations and complaint investigations. The Contractor shall permit the Government to inspect and copy any books, accounts, records (including computerized records), and other material that may be relevant to the matter under investigation and pertinent to compliance with Executive Order 11246, as amended, and rules and regulations that implement the Executive Order.

(9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended; in the rules, regulations, and orders of the Secretary of Labor; or as otherwise provided by law.

(10) The Contractor shall include the terms and conditions of subparagraphs (b)(1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting officer may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(c) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

(End of clause)

52.222-35 EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (DEC 2001)

(a) Definitions. As used in this clause--

All employment openings means all positions except executive and top management, those positions that will be filled from within the Contractor's organization, and positions lasting 3 days or less. This term includes full-time employment, temporary employment of more than 3 days duration, and part-time employment.

Executive and top management means any employee--

(1) Whose primary duty consists of the management of the enterprise in which the individual is employed or of a customarily recognized department or subdivision thereof;

(2) Who customarily and regularly directs the work of two or more other employees;

(3) Who has the authority to hire or fire other employees or whose suggestions and recommendations as to the hiring or firing and as to the advancement and promotion or any other change of status of other employees will be given particular weight;

(4) Who customarily and regularly exercises discretionary powers; and

(5) Who does not devote more than 20 percent or, in the case of an employee of a retail or service establishment, who does not devote more than 40 percent of total hours of work in the work week to activities that are not directly and closely related to the performance of the work described in paragraphs (1) through (4) of this definition. This paragraph (5) does not apply in the case of an employee who is in sole charge of an establishment or a physically separated branch establishment, or who owns at least a 20 percent interest in the enterprise in which the individual is employed.

Other eligible veteran means any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized.

Positions that will be filled from within the Contractor's organization means employment openings for which the Contractor will give no consideration to persons outside the Contractor's organization (including any affiliates, subsidiaries, and parent companies) and includes any openings the Contractor proposes to fill from regularly established “recall” lists. The exception does not apply to a particular opening once an employer decides to consider applicants outside of its organization.

Qualified special disabled veteran means a special disabled veteran who satisfies the requisite skill, experience, education, and other job-related requirements of the employment position such veteran holds or desires, and who, with or without reasonable accommodation, can perform the essential functions of such position.

Special disabled veteran means--

(1) A veteran who is entitled to compensation (or who but for the receipt of military retired pay would be entitled to compensation) under laws administered by the Department of Veterans Affairs for a disability--

(i) Rated at 30 percent or more; or

(ii) Rated at 10 or 20 percent in the case of a veteran who has been determined under 38 U.S.C. 3106 to have a serious employment handicap (i.e., a significant impairment of the veteran's ability to prepare for, obtain, or retain employment consistent with the veteran's abilities, aptitudes, and interests); or

(2) A person who was discharged or released from active duty because of a service-connected disability.

Veteran of the Vietnam era means a person who--

(1) Served on active duty for a period of more than 180 days and was discharged or released from active duty with other than a dishonorable discharge, if any part of such active duty occurred--

(i) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or

(ii) Between August 5, 1964, and May 7, 1975, in all other cases; or

(2) Was discharged or released from active duty for a service-connected disability if any part of the active duty was performed--

(i) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or

(ii) Between August 5, 1964, and May 7, 1975, in all other cases.
(b) General. (1) The Contractor shall not discriminate against the individual because the individual is a special disabled veteran, a veteran of the Vietnam era, or other eligible veteran, regarding any position for which the employee or applicant for employment is qualified. The Contractor shall take affirmative action to employ, advance in employment, and otherwise treat qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans without discrimination based upon their disability or veterans' status in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff and rehiring;

(iii) Rate of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;

(vii) Selection and financial support for training, including apprenticeship, and on-the-job training under 38 U.S.C. 3687, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the Contractor including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

(2) The Contractor shall comply with the rules, regulations, and relevant orders of the Secretary of Labor issued under the Vietnam Era Veterans' Readjustment Assistance Act of 1972 (the Act), as amended (38 U.S.C. 4211 and 4212).

(c) Listing openings. (1) The Contractor shall immediately list all employment openings that exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract, and including those occurring at an establishment of the Contractor other than the one where the contract is being performed, but excluding those of independently operated corporate affiliates, at an appropriate local public employment service office of the State wherein the opening occurs. Listing employment openings with the U.S. Department of Labor's America's Job Bank shall satisfy the requirement to list jobs with the local employment service office.

(2) The Contractor shall make the listing of employment openings with the local employment service office at least concurrently with using any other recruitment source or effort and shall involve the normal obligations of placing a bona fide job order, including accepting referrals of veterans and nonveterans. This listing of employment openings does not require hiring any particular job applicant or hiring from any particular group of job applicants and is not intended to relieve the Contractor from any requirements of Executive orders or regulations concerning nondiscrimination in employment.

(3) Whenever the Contractor becomes contractually bound to the listing terms of this clause, it shall advise the State public employment agency in each State where it has establishments of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these terms and has so advised the State agency, it need not advise the State agency of subsequent contracts. The Contractor may advise the State agency when it is no longer bound by this contract clause.

(d) Applicability. This clause does not apply to the listing of employment openings that occur and are filled outside the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, American Samoa, Guam, the Virgin Islands of the United States, and Wake Island.

(e) Postings. (1) The Contractor shall post employment notices in conspicuous places that are available to employees and applicants for employment.

(2) The employment notices shall--

(i) State the rights of applicants and employees as well as the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified employees and applicants who are special disabled veterans, veterans of the Vietnam era, and other eligible veterans; and

(ii) Be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance Programs, Department of Labor (Deputy Assistant Secretary of Labor), and provided by or through the Contracting Officer.

(3) The Contractor shall ensure that applicants or employees who are special disabled veterans are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled veteran, or may lower the posted notice so that it can be read by a person in a wheelchair).

(4) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement, or other contract understanding, that the Contractor is bound by the terms of the Act and is committed to take affirmative action to employ, and advance in employment, qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans.

(f) Noncompliance. If the Contractor does not comply with the requirements of this clause, the Government may take appropriate actions under the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(g) Subcontracts. The Contractor shall insert the terms of this clause in all subcontracts or purchase orders of $25,000 or more unless exempted by rules, regulations, or orders of the Secretary of Labor. The Contractor shall act as specified by the Deputy Assistant Secretary of Labor to enforce the terms, including action for noncompliance.

(End of clause)

52.222-36 AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES (JUN 1998)

(a) General. (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not discriminate against any employee or applicant because of physical or mental disability. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified individuals with disabilities without discrimination based upon their physical or mental disability in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff, and rehiring;

(iii) Rates of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;

(vii) Selection and financial support for training, including apprenticeships, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the Contractor, including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

(2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Rehabilitation Act of 1973 (29 U.S.C. 793) (the Act), as amended.

(b) Postings. (1) The Contractor agrees to post employment notices stating--

(i) The Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified individuals with disabilities; and

(ii) The rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. The Contractor shall ensure that applicants and employees with disabilities are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled individual, or may lower the posted notice so that it might be read by a person in a wheelchair). The notices shall be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance of the U.S. Department of Labor (Deputy Assistant Secretary) and shall be provided by or through the Contracting Officer.

(3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Section 503 of the Act and is committed to take affirmative action to employ, and advance in employment, qualified individuals with physical or mental disabilities.

(c) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.

(d) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order in excess of $10,000 unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

(End of clause)

52.222-37 EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (DEC 2001)

(a) Unless the Contractor is a State or local government agency, the Contractor shall report at least annually, as required by the Secretary of Labor, on--

(1) The number of disabled veterans and the number of veterans of the Vietnam era in the workforce of the contractor by job category and hiring location; and

(2) The total number of new employees hired during the period covered by the report, and of that total, the number of disabled veterans, and the number of veterans of the Vietnam era.

(b) The above items shall be reported by completing the form entitled "Federal Contractor Veterans' Employment Report VETS-100."

(c) Reports shall be submitted no later than September 30 of each year beginning September 30, 1988.

(d) The employment activity report required by paragraph (a)(2) of this clause shall reflect total hires during the most recent 12-month period as of the ending date selected for the employment profile report required by paragraph (a)(1) of this clause. Contractors may select an ending date: (1) As of the end of any pay period during the period January through March 1st of the year the report is due, or (2) as of December 31, if the contractor has previous written approval from the Equal Employment Opportunity Commission to do so for purposes of submitting the Employer Information Report EEO-1 (Standard Form 100).

(e) The count of veterans reported according to paragraph (a) of this clause shall be based on voluntary disclosure. Each Contractor subject to the reporting requirements at 38 U.S.C. 4212 shall invite all disabled veterans and veterans of the Vietnam era who wish to benefit under the affirmative action program at 38 U.S.C. 4212 to identify themselves to the Contractor. The invitation shall state that the information is voluntarily provided; that the information will be kept confidential; that disclosure or refusal to provide the information will not subject the applicant or employee to

any adverse treatment; and that the information will be used only in accordance with the regulations promulgated under 38 U.S.C. 4212.

(f) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations, or orders of the Secretary.

(End of clause)

52.223-3 HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (JAN 1997)

(a) "Hazardous material", as used in this clause, includes any material defined as hazardous under the latest version of Federal Standard No. 313 (including revisions adopted during the term of the contract).

(b) The offeror must list any hazardous material, as defined in paragraph (a) of this clause, to be delivered under this contract. The hazardous material shall be properly identified and include any applicable identification number, such as National Stock Number or Special Item Number. This information shall also be included on the Material Safety Data Sheet submitted under this contract.

Material (If none, insert "None")	Identification No.
_____	_____
_____	_____
_____	_____

(c) This list must be updated during performance of the contract whenever the Contractor determines that any other material to be delivered under this contract is hazardous.

(d) The apparently successful offeror agrees to submit, for each item as required prior to award, a Material Safety Data Sheet, meeting the requirements of 29 CFR 1910.1200(g) and the latest version of Federal Standard No. 313, for all hazardous material identified in paragraph (b) of this clause. Data shall be submitted in accordance with Federal Standard No. 313, whether or not the apparently successful offeror is the actual manufacturer of these items. Failure to submit the Material Safety Data Sheet prior to award may result in the apparently successful offeror being considered nonresponsible and ineligible for award.

(e) If, after award, there is a change in the composition of the item(s) or a revision to Federal Standard No. 313, which renders incomplete or inaccurate the data submitted under paragraph (d) of this clause, the Contractor shall promptly notify the Contracting Officer and resubmit the data.

(f) Neither the requirements of this clause nor any act or failure to act by the Government shall relieve the Contractor of any responsibility or liability for the safety of Government, Contractor, or subcontractor personnel or property.

(g) Nothing contained in this clause shall relieve the Contractor from complying with applicable Federal, State, and local laws, codes, ordinances, and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

(h) The Government's rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this clause is applicable. The purposes of this right are to--

(i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials;

(ii) Obtain medical treatment for those affected by the material; and

(iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h)(1) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

(End of clause)

52.223-5 POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION (AUG 2003)

(a) Definitions. As used in this clause--

Priority chemical means a chemical identified by the Interagency Environmental Leadership Workgroup or, alternatively, by an agency pursuant to section 503 of Executive Order 13148 of April 21, 2000, Greening the Government through Leadership in Environmental Management.

"Toxic chemical means a chemical or chemical category listed in 40 CFR 372.65."

(b) Executive Order 13148 requires Federal facilities to comply with the provisions of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11001-11050) and the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13101-13109).

(c) The Contractor shall provide all information needed by the Federal facility to comply with the following:

(1) The emergency planning reporting requirements of section 302 of EPCRA.

(2) The emergency notice requirements of section 304 of EPCRA.

(3) The list of Material Safety Data Sheets, required by section 311 of EPCRA.

(4) The emergency and hazardous chemical inventory forms of section 312 of EPCRA.

(5) The toxic chemical release inventory of section 313 of EPCRA, which includes the reduction and recycling information required by section 6607 of PPA.

(6) The toxic chemical, priority chemical, and hazardous substance release and use reduction goals of sections 502 and 503 of Executive Order 13148.

(End of clause)

52.223-6 DRUG-FREE WORKPLACE (MAY 2001)

(a) Definitions. As used in this clause --

"Controlled substance" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11 - 1308.15.

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to deter- mine violations of the Federal or State criminal drug statutes.

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession, or use of any controlled substance.

"Drug-free workplace" means the site(s) for the performance of work done by the Contractor in connection with a specific contract at which employees of the Contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other Contractor employee who has other than a minimal impact or involvement in contract performance.

"Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.

(b) The Contractor, if other than an individual, shall-- within 30 days after award (unless a longer period is agreed to in writing for contracts of 30 days or more performance duration), or as soon as possible for contracts of less than 30 days performance duration--

(1) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

(2) Establish an ongoing drug-free awareness program to inform such employees about--

(i) The dangers of drug abuse in the workplace;

(ii) The Contractor's policy of maintaining a drug-free workplace;

(iii) Any available drug counseling, rehabilitation, and employee assistance programs; and

(iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (b)(1) of this clause;

(4) Notify such employees in writing in the statement required by subparagraph (b)(1) of this clause that, as a condition of continued employment on this contract, the employee will--

(i) Abide by the terms of the statement; and

(ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction.

(5) Notify the Contracting Officer in writing within 10 days after receiving notice under subdivision (b)(4)(ii) of this clause, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;

(6) Within 30 days after receiving notice under subdivision (b)(4)(ii) of this clause of a conviction, take one of the

following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:

(i) Taking appropriate personnel action against such employee, up to and including termination; or

(ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency; and

(7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (b)(1) though (b)(6) of this clause.

(c) The Contractor, if an individual, agrees by award of the contract or acceptance of a purchase order, not to engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance while performing this contract.

(d) In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraph (b) or (c) of this clause may, pursuant to FAR 23.506, render the Contractor subject to suspension of contract payments, termination of the contract for default, and suspension or debarment.

(End of clause)

52.223-14 TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)

(a) Unless otherwise exempt, the Contractor, as owner or operator of a facility used in the performance of this contract, shall file by July 1 for the prior calendar year an annual Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023(a) and (g)), and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106). The Contractor shall file, for each facility subject to the Form R filing and reporting requirements, the annual Form R throughout the life of the contract.

(b) A Contractor-owned or -operated facility used in the performance of this contract is exempt from the requirement to file an annual Form R if--

(1) The facility does not manufacture, process, or otherwise use any toxic chemicals listed in 40 CFR 372.65;

(2) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);

(3) The facility does not meet the reporting thresholds of toxic chemicals established under of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

(4) The facility does not fall within the following Standard Industrial Classification (SIC) codes or their corresponding North American Industry Classification System sectors:

(i) Major group code 10 (except 1011, 1081, and 1094.

(ii) Major group code 12 (except 1241).

(iii) Major group codes 20 through 39.

(iv) Industry code 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce).

(v) Industry code 4953 (limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C (42 U.S.C. 6921, et seq.)), 5169, 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis); or

(5) The facility is not located in the United States or its outlying areas.

(c) If the Contractor has certified to an exemption in accordance with one or more of the criteria in paragraph (b) of this clause, and after award of the contract circumstances change so that any of its owned or operated facilities used in the performance of this contract is no longer exempt--

(1) The Contractor shall notify the Contracting Officer; and

(2) The Contractor, as owner or operator of a facility used in the performance of this contract that is no longer exempt, shall (i) submit a Toxic Chemical Release Inventory Form (Form R) on or before July 1 for the prior calendar year during which the facility becomes eligible; and (ii) continue to file the annual Form R for the life of the contract for such facility.

(d) The Contracting Officer may terminate this contract or take other action as appropriate, if the Contractor fails to comply accurately and fully with the EPCRA and PPA toxic chemical release filing and reporting requirements.

(e) Except for acquisitions of commercial items, as defined in FAR Part 2, the Contractor shall--

(1) For competitive subcontracts expected to exceed $100,000 (including all options), include a solicitation provision substantially the same as the provision at FAR 52.223-13, Certification of Toxic Chemical Release Reporting; and

(2) Include in any resultant subcontract exceeding $100,000 (including all options), the substance of this clause, except this paragraph (e).

(End of clause)

52.225-13 RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (DEC 2003)

(a) Except as authorized by the Office of Foreign Assets Control (OFAC) in the Department of the Treasury, the Contractor shall not acquire, for use in the performance of this contract, any supplies or services if any proclamation, Executive order, or statute administered by OFAC, or if OFAC's implementing regulations at 31 CFR chapter V, would prohibit such a transaction by a person subject to the jurisdiction of the United States.

(b) Except as authorized by OFAC, most transactions involving Cuba, Iran, Libya, and Sudan are prohibited, as are most imports from North Korea, into the United States or its outlying areas. Lists of entities and individuals subject to economic sanctions are included in OFAC's List of Specially Designated Nationals and Blocked Persons at TerList1.html. More information about these restrictions, as well as updates, is available in the OFAC's regulations at 31 CFR chapter V and/or on OFAC's Web site at http://www.treas.gov/ofac.

(c) The Contractor shall insert this clause, including this paragraph (c), in all subcontracts.

(End of clause)

52.227-1 AUTHORIZATION AND CONSENT (JUL 1995)

(a) The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or (2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a subcontractor with (i) specifications or written provisions forming a part of this contract or (ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

(b) The Contractor agrees to include, and require inclusion of, this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed the simplified acquisition threshold (however, omission of this clause from any subcontract, including those at or below the simplified acquisition threshold, does not affect this authorization and consent.)

(End of clause)

52.227-2 NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (AUG 1996)

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

(e) The Contractor agrees to include, and require inclusion of, this clause in all subcontracts at any tier for supplies or services (including construction and architect-engineer subcontracts and those for material, supplies, models, samples, or design or testing services) expected to exceed the simplified acquisition threshold at (FAR) 2.101.to exceed the dollar amount set forth in 13.000 of the Federal Acquisition Regulation (FAR).

(End of clause)

52.228-5 INSURANCE--WORK ON A GOVERNMENT INSTALLATION (JAN 1997)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance of this contract, at least the kinds and minimum amounts of insurance required in the Schedule or elsewhere in the contract.

(b) Before commencing work under this contract, the Contractor shall notify the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective (1) for such period as the laws of the State in which this contract is to be performed prescribe, or (2) until 30

days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

(End of clause)

52.229-3 FEDERAL, STATE, AND LOCAL TAXES (APR 2003)

(a) As used in this clause--

"Contract date" means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this contract or modification.

"All applicable Federal, State, and local taxes and duties" means all taxes and duties, in effect on the contract date, that the taxing authority is imposing and collecting on the transactions or property covered by this contract.

"After-imposed Federal tax" means any new or increased Federal excise tax or duty, or tax that was exempted or excluded on the contract date but whose exemption was later revoked or reduced during the contract period, on the transactions or property covered by this contract that the Contractor is required to pay or bear as the result of legislative, judicial, or administrative action taking effect after the contract date. It does not include social security tax or other employment taxes.

"After-relieved Federal tax" means any amount of Federal excise tax or duty, except social security or other employment taxes, that would otherwise have been payable on the transactions or property covered by this contract, but which the Contractor is not required to pay or bear, or for which the Contractor obtains a refund or drawback, as the result of legislative, judicial, or administrative action taking effect after the contract date.

Local taxes includes taxes imposed by a possession or territory of the United States, Puerto Rico, or the Northern Mariana Islands, if the contract is performed wholly or partly in any of those areas.

(b) The contract price includes all applicable Federal, State, and local taxes and duties.

(c) The contract price shall be increased by the amount of any after-imposed Federal tax, provided the Contractor warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the contract price, as a contingency reserve or otherwise.

(d) The contract price shall be decreased by the amount of any after-relieved Federal tax.

(e) The contract price shall be decreased by the amount of any Federal excise tax or duty, except social security or other employment taxes, that the Contractor is required to pay or bear, or does not obtain a refund of, through the Contractor's fault, negligence, or failure to follow instructions of the Contracting Officer.

(f) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds $250.

(g) The Contractor shall promptly notify the Contracting Officer of all matters relating to any Federal excise tax or duty that reasonably may be expected to result in either an increase or decrease in the contract price and shall take appropriate action as the Contracting Officer directs.

(h) The Government shall, without liability, furnish evidence appropriate to establish exemption from any Federal, State, or local tax when the Contractor requests such evidence and a reasonable basis exists to sustain the exemption.

(End of clause)

52.232-1 PAYMENTS (APR 1984)

The Government shall pay the Contractor, upon the submission of proper invoices or vouchers, the prices stipulated in this contract for supplies delivered and accepted or services rendered and accepted, less any deductions provided in this contract. Unless otherwise specified in this contract, payment shall be made on partial deliveries accepted by the Government if--

(a) The amount due on the deliveries warrants it; or

(b) The Contractor requests it and the amount due on the deliveries is at least $1,000 or 50 percent of the total contract price.

(End of clause)

52.232-8 DISCOUNTS FOR PROMPT PAYMENT (FEB 2002)

(a) Discounts for prompt payment will not be considered in the evaluation of offers. However, any offered discount will form a part of the award, and will be taken if payment is made within the discount period indicated in the offer by the offeror. As an alternative to offering a discount for prompt payment in conjunction with the offer, offerors awarded contracts may include discounts for prompt payment on individual invoices.

(b) In connection with any discount offered for prompt payment, time shall be computed from the date of the invoice. If the Contractor has not placed a date on the invoice, the due date shall be calculated from the date the designated billing office receives a proper invoice, provided the agency annotates such invoice with the date of receipt at the time of receipt. For the purpose of computing the discount earned, payment shall be considered to have been made on the date that appears on the payment check or, for an electronic funds transfer, the specified payment date. When the discount date falls on a Saturday, Sunday, or legal holiday when Federal Government offices are closed and Government business is not expected to be conducted, payment may be made on the following business day.

(End of clause)

52.232-9 LIMITATION ON WITHHOLDING OF PAYMENTS (APR 1984)

If more than one clause or Schedule term of this contract authorizes the temporary withholding of amounts otherwise payable to the Contractor for supplies delivered or services performed, the total of the amounts withheld at any one time shall not exceed the greatest amount that may be withheld under any one clause or Schedule term at that time; provided, that this limitation shall not apply to--

(a) Withholdings pursuant to any clause relating to wages or hours of employees;

(b) Withholdings not specifically provided for by this contract;

(c) The recovery of overpayments; and

(d) Any other withholding for which the Contracting Officer determines that this limitation is inappropriate.

(End of clause)

52.232-11 EXTRAS (APR 1984)

Except as otherwise provided in this contract, no payment for extras shall be made unless such extras and the price therefore have been authorized in writing by the Contracting Officer.

(End of clause)

52.232-16 PROGRESS PAYMENTS (APR 2003)

The Government will make progress payments to the Contractor when requested as work progresses, but not more frequently than monthly, in amounts of $2,500 or more approved by the Contracting Officer, under the following conditions:

(a) Computation of amounts. (1) Unless the Contractor requests a smaller amount, the Government will compute each progress payment as 80 percent of the Contractor's total costs incurred under this contract whether or not actually paid, plus financing payments to subcontractors (see paragraph (j) of this clause), less the sum of all previous progress payments made by the Government under this contract. The Contracting Officer will consider cost of money that would be allowable under FAR 31.205-10 as an incurred cost for progress payment purposes.

(2) The amount of financing and other payments for supplies and services purchased directly for the contract are limited to the amounts that have been paid by cash, check, or other forms of payment, or that are determined due and will be paid to subcontractors--

(i) In accordance with the terms and conditions of a subcontract or invoice; and

(ii) Ordinarily within 30 days of the submission of the Contractor's payment request to the Government.

(3) The Government will exclude accrued costs of Contractor contributions under employee pension plans until actually paid unless--

(i) The Contractor's practice is to make contributions to the retirement fund quarterly or more frequently; and

(ii) The contribution does not remain unpaid 30 days after the end of the applicable quarter or shorter payment period (any contribution remaining unpaid shall be excluded from the Contractor's total costs for progress payments until paid).

(4) The Contractor shall not include the following in total costs for progress payment purposes in paragraph (a)(1) of this clause:

(i) Costs that are not reasonable, allocable to this contract, and consistent with sound and generally accepted accounting principles and practices.

(ii) Costs incurred by subcontractors or suppliers.

(iii) Costs ordinarily capitalized and subject to depreciation or amortization except for the properly depreciated or amortized portion of such costs.

(iv) Payments made or amounts payable to subcontractors or suppliers, except for --

(A) Completed work, including partial deliveries, to which the Contractor has acquired title; and

(B) Work under cost-reimbursement or time-and-material subcontracts to which the Contractor has acquired title.

(5) The amount of unliquidated progress payments may exceed neither (i) the progress payments made against incomplete work (including allowable unliquidated progress payments to subcontractors) nor

(ii) the value, for progress payment purposes, of the incomplete work. Incomplete work shall be considered to be the supplies and services required by this contract, for which delivery and invoicing by the Contractor and acceptance by the Government are incomplete.

(6) The total amount of progress payments shall not exceed 80 percent of the total contract price.

(7) If a progress payment or the unliquidated progress payments exceed the amounts permitted by subparagraphs (a)(4) or (a)(5) of this clause, the Contractor shall repay the amount of such excess to the Government on demand.

(8) Notwithstanding any other terms of the contract, the Contractor agrees not to request progress payments in dollar amounts of less than $2,500. The Contracting Officer may make exceptions.

(b) Liquidation. Except as provided in the Termination for Convenience of the Government clause, all progress payments shall be liquidated by deducting from any payment under this contract, other than advance or progress payments, the unliquidated progress payments, or 80 percent of the amount invoiced, whichever is less. The Contractor shall repay to the Government any amounts required by a retroactive price reduction, after computing liquidations and payments on past invoices at the reduced prices and adjusting the unliquidated progress payments accordingly. The Government reserves the right to unilaterally change from the ordinary liquidation rate to an alternate rate when deemed appropriate for proper contract financing.

(c) Reduction or suspension. The Contracting Officer may reduce or suspend progress payments, increase the rate of liquidation, or take a combination of these actions, after finding on substantial evidence any of the following conditions:

(1) The Contractor failed to comply with any material requirement of this contract (which includes paragraphs (f) and (g) of this clause).

(2) Performance of this contract is endangered by the Contractor's --

(i) Failure to make progress or

(ii) Unsatisfactory financial condition.

(3) Inventory allocated to this contract substantially exceeds reasonable requirements.

(4) The Contractor is delinquent in payment of the costs of performing this contract in the ordinary course of business.

(5) The unliquidated progress payments exceed the fair value of the work accomplished on the undelivered portion of this contract.

(6) The Contractor is realizing less profit than that reflected in the establishment of any alternate liquidation rate in

paragraph (b) of this clause, and that rate is less than the progress payment rate stated in subparagraph (a)(1) of this clause.

(d) Title.

(1) Title to the property described in this paragraph (d) shall vest in the Government. Vestiture shall be immediately upon the date of this contract, for property acquired or produced before that date. Otherwise, vestiture shall occur when the property is or should have been allocable or properly chargeable to this contract.

(2) "Property," as used in this clause, includes all of the below-described items acquired or produced by the Contractor that are or should be allocable or properly chargeable to this contract under sound and generally accepted accounting principles and practices.

(i) Parts, materials, inventories, and work in process;

(ii) Special tooling and special test equipment to which the Government is to acquire title under any other clause of this contract;

(iii) Nondurable (i.e., noncapital) tools, jigs, dies, fixtures, molds, patterns, taps, gauges, test equipment, and other similar manufacturing aids, title to which would not be obtained as special tooling under paragraph (d) (2)(ii) of this clause; and

(iv) Drawings and technical data, to the extent the Contractor or subcontractors are required to deliver them to the Government by other clauses of this contract.

(3) Although title to property is in the Government under this clause, other applicable clauses of this contract; e.g., the termination or special tooling clauses, shall determine the handling and disposition of the property.

(4) The Contractor may sell any scrap resulting from production under this contract without requesting the Contracting Officer's approval, but the proceeds shall be credited against the costs of performance.

(5) To acquire for its own use or dispose of property to which title is vested in the Government under this clause, the Contractor must obtain the Contracting Officer's advance approval of the action and the terms. The Contractor shall (i) exclude the allocable costs of the property from the costs of contract performance, and (ii) repay to the Government any amount of unliquidated progress payments allocable to the property. Repayment may be by cash or credit memorandum.

(6) When the Contractor completes all of the obligations under this contract, including liquidation of all progress payments, title shall vest in the Contractor for all property (or the proceeds thereof) not--

(i) Delivered to, and accepted by, the Government under this contract; or

(ii) Incorporated in supplies delivered to, and accepted by, the Government under this contract and to which title is vested in the Government under this clause.

(7) The terms of this contract concerning liability for Government-furnished property shall not apply to property to which the Government acquired title solely under this clause.

(e) Risk of loss. Before delivery to and acceptance by the Government, the Contractor shall bear the risk of loss for property, the title to which vests in the Government under this clause, except to the extent the Government expressly assumes the risk. The Contractor shall repay the Government an amount equal to the unliquidated progress payments that are based on costs allocable to property that is damaged, lost, stolen, or destroyed.

(f) Control of costs and property. The Contractor shall maintain an accounting system and controls adequate for the

proper administration of this clause.

(g) Reports and access to records. The Contractor shall promptly furnish reports, certificates, financial statements, and other pertinent information reasonably requested by the Contracting Officer for the administration of this clause. Also, the Contractor shall give the Government reasonable opportunity to examine and verify the Contractor's books, records, and accounts.

(h) Special terms regarding default. If this contract is terminated under the Default clause, (i) the Contractor shall, on demand, repay to the Government the amount of unliquidated progress payments and (ii) title shall vest in the Contractor, on full liquidation of progress payments, for all property for which the Government elects not to require delivery under the Default clause. The Government shall be liable for no payment except as provided by the Default clause.

(i) Reservations of rights.

(1) No payment or vesting of title under this clause shall --

(i) Excuse the Contractor from performance of obligations under this contract or

(ii) Constitute a waiver of any of the rights or remedies of the parties under the contract.

(2) The Government's rights and remedies under this clause

(i) Shall not be exclusive but rather shall be in addition to any other rights and remedies provided by law or this contract and

(ii) Shall not be affected by delayed, partial, or omitted exercise of any right, remedy, power, or privilege, nor shall such exercise or any single exercise preclude or impair any further exercise under this clause or the exercise of any other right, power, or privilege of the Government.

(j) Financing payments to subcontractors. The financing payments to subcontractors mentioned in paragraphs (a)(1) and (a)(2) of this clause shall be all financing payments to subcontractors or divisions, if the following conditions are met:

(1) The amounts included are limited to--

(i) The unliquidated remainder of financing payments made; plus

(ii) Any unpaid subcontractor requests for financing payments.

(2) The subcontract or interdivisional order is expected to involve a minimum of approximately 6 months between the beginning of work and the first delivery; or, if the subcontractor is a small business concern, 4 months.

(3) If the financing payments are in the form of progress payments, the terms of the subcontract or interdivisional order concerning progress payments--

(i) Are substantially similar to the terms of this clause for any subcontractor that is a large business concern, or this clause with its Alternate I for any subcontractor that is a small business concern;

(ii) Are at least as favorable to the Government as the terms of this clause;

(iii) Are not more favorable to the subcontractor or division than the terms of this clause are to the Contractor;

(iv) Are in conformance with the requirements of FAR 32.504(e); and

(v) Subordinate all subcontractor rights concerning property to which the Government has title under the subcontract to the Government's right to require delivery of the property to the Government if--

(A) The Contractor defaults; or

(B) The subcontractor becomes bankrupt or insolvent.

(4) If the financing payments are in the form of performance-based payments, the terms of the subcontract or interdivisional order concerning payments--

(i) Are substantially similar to the Performance-Based Payments clause at FAR 52.232-32 and meet the criteria for, and definition of, performance-based payments in FAR Part 32;

(ii) Are in conformance with the requirements of FAR 32.504(f); and

(iii) Subordinate all subcontractor rights concerning property to which the Government has title under the subcontract to the Government's right to require delivery of the property to the Government if--

(A) The Contractor defaults; or

(B) The subcontractor becomes bankrupt or insolvent.

(5) If the financing payments are in the form of commercial item financing payments, the terms of the subcontract or interdivisional order concerning payments--

(i) Are constructed in accordance with FAR 32.206(c) and included in a subcontract for a commercial item purchase that meets the definition and standards for acquisition of commercial items in FAR Parts 2 and 12;

(ii) Are in conformance with the requirements of FAR 32.504(g); and

(iii) Subordinate all subcontractor rights concerning property to which the Government has title under the subcontract to the Government's right to require delivery of the property to the Government if--

(A) The Contractor defaults; or

(B) The subcontractor becomes bankrupt or insolvent.

(6) If financing is in the form of progress payments, the progress payment rate in the subcontract is the customary rate used by the contracting agency, depending on whether the subcontractor is or is not a small business concern.

(7) Concerning any proceeds received by the Government for property to which title has vested in the Government under the subcontract terms, the parties agree that the proceeds shall be applied to reducing any unliquidated financing payments by the Government to the Contractor under this contract.

(8) If no unliquidated financing payments to the Contractor remain, but there are unliquidated financing payments that the Contractor has made to any subcontractor, the Contractor shall be subrogated to all the rights the Government obtained through the terms required by this clause to be in any subcontract, as if all such rights had been assigned and transferred to the Contractor.

(9) To facilitate small business participation in subcontracting under this contract, the Contractor shall provide financing payments to small business concerns, in conformity with the standards for customary contract financing payments stated in Subpart 32.113. The Contractor shall not consider the need for such financing payments as a handicap or adverse factor in the award of subcontracts.

(k) Limitations on undefinitized contract actions. Notwithstanding any other progress payment provisions in this contract, progress payments may not exceed 80 percent of costs incurred on work accomplished under undefinitized contract actions. A "contract action" is any action resulting in a contract, as defined in Subpart 2.1, including contract modifications for additional supplies or services, but not including contract modifications that are within the scope and under the terms of the contract, such as contract modifications issued pursuant to the Changes clause, or funding and other administrative changes. This limitation shall apply to the costs incurred, as computed in accordance with paragraph (a) of this clause, and shall remain in effect until the contract action is definitized. Costs incurred which are subject to this limitation shall be segregated on Contractor progress payment requests and invoices from those costs eligible for higher progress payment rates. For purposes of progress payment liquidation, as described in paragraph (b) of this clause, progress payments for undefinitized contract actions shall be liquidated at 80 percent of the amount invoiced for work performed under the undefinitized contract action as long as the contract action remains undefinitized. The amount of unliquidated progress payments for undefinitized contract actions shall not exceed 80 percent of the maximum liability of the Government under the undefinitized contract action or such lower limit specified elsewhere in the contract. Separate limits may be specified for separate actions.

(l) Due date. The designated payment office will make progress payments on the “30th” day after the designated billing office receives a proper progress payment request. In the event that the Government requires an audit or other review of a specific progress payment request to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the specified due date. Progress payments are considered contract financing and are not subject to the interest penalty provisions of the Prompt Payment Act.

(m) Progress payments under indefinite--delivery contracts. The Contractor shall account for and submit progress payment requests under individual orders as if the order constituted a separate contract, unless otherwise specified in this contract.

(End of clause)

52.232-17 INTEREST (JUNE 1996)

(a) Except as otherwise provided in this contract under a Price Reduction for Defective Cost or Pricing Data clause or a Cost Accounting Standards clause, all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid. reproduce, prepare derivative works, distribute copies to the public, and (b) Amounts shall be due at the earliest of the following dates:

(1) The date fixed under this contract.

(2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination.

(3) The date the Government transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt.

(4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification.

(c) The interest charge made under this clause may be reduced under the procedures prescribed in 32.614-2 of the Federal Acquisition Regulation in effect on the date of this contract.

(End of clause)

52.232-23 ASSIGNMENT OF CLAIMS (JAN 1986) - ALTERNATE I (APR 1984)

(a) The Contractor, under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence. Unless otherwise stated in this contract, payments to an assignee of any amounts due or to become due under this contract shall not, to the extent specified in the Act, be subject to reduction or setoff.

(b) Any assignment or reassignment authorized under the Act and this clause shall cover all unpaid amounts payable under this contract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this contract.

(c) The Contractor shall not furnish or disclose to any assignee under this contract any classified document (including this contract) or information related to work under this contract until the Contracting Officer authorizes such action in writing.

(End of clause)

52.232-25 PROMPT PAYMENT (OCT 2003)

Notwithstanding any other payment clause in this contract, the Government will make invoice payments under the terms and conditions specified in this clause. The Government considers payment as being made on the day a check is dated or the date of an electronic funds transfer (EFT). Definitions of pertinent terms are set forth in sections 2.101, 32.001, and 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see paragraph (a)(4) of this clause concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments--(1) Due date. (i) Except as indicated in paragraphs (a)(2) and (c) of this clause, the due date for making invoice payments by the designated payment office is the later of
the following two events:

(A) The 30th day after the designated billing office receives a proper invoice from the Contractor (except as provided in paragraph (a)(1)(ii) of this clause).

(B) The 30th day after Government acceptance of supplies delivered or services performed. For a final invoice, when the payment amount is subject to contract settlement actions, acceptance is deemed to occur on the effective date of the contract settlement.

(ii) If the designated billing office fails to annotate the invoice with the actual date of receipt at the time of receipt, the invoice payment due date is the 30th day after the date of the Contractor's invoice, provided the designated billing office receives a proper invoice and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(2) Certain food products and other payments. (i) Due dates on Contractor invoices for meat, meat food products, or fish; perishable agricultural commodities; and dairy products, edible fats or oils, and food products prepared from edible fats or oils are--

(A) For meat or meat food products, as defined in section 2(a)(3) of the Packers and Stockyard Act of 1921 (7 U.S.C. 182(3)), and as further defined in Pub. L. 98-181, including any edible fresh or frozen poultry meat, any perishable poultry meat food product, fresh eggs, and any perishable egg product, as close as possible to, but not later than, the 7th day after product delivery.

(B) For fresh or frozen fish, as defined in section 204(3) of the Fish and Seafood Promotion Act of 1986 (16 U.S.C. 4003(3)), as close as possible to, but not later than, the 7th day after product delivery.

C) For perishable agricultural commodities, as defined in section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(4)), as close as possible to, but not later than, the 10th day after product delivery, unless another date is specified in the contract.

(D) For dairy products, as defined in section 111(e) of the Dairy Production Stabilization Act of 1983 (7 U.S.C. 4502(e)), edible fats or oils, and food products prepared from edible fats or oils, as close as possible to, but not later than, the 10th day after the date on which a proper invoice has been received. Liquid milk, cheese, certain processed cheese products, butter, yogurt, ice cream, mayonnaise, salad dressings, and other similar products, fall within this classification. Nothing in the Act limits this classification to refrigerated products. When questions arise regarding the proper classification of a specific product, prevailing industry practices will be followed in specifying a contract payment due date. The burden of proof that a classification of a specific product is, in fact, prevailing industry practice is upon the Contractor making the representation.

(ii) If the contract does not require submission of an invoice for payment (e.g., periodic lease payments), the due date will be as specified in the contract.

(3) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraphs (a)(3)(i) through (a)(3)(x) of this clause. If the invoice does not comply with these requirements, the designated billing office will return it within 7 days after receipt (3 days for meat, meat food products, or fish; 5 days for perishable agricultural commodities, dairy products, edible fats or oils, and food products prepared from edible fats or oils), with the reasons why it is not a proper invoice. The Government will take into account untimely notification when computing any interest penalty owed the Contractor.

(i) Name and address of the Contractor.

(ii) Invoice date and invoice number. (The Contractor should date invoices as close as possible to the date of the mailing or transmission.)

(iii) Contract number or other authorization for supplies delivered or services performed (including order number and contract line item number).

(iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.

(v) Shipping and payment terms (e.g., shipment number and date of shipment, discount for prompt payment terms). Bill of lading number and weight of shipment will be shown for shipments on Government bills of lading.

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a defective invoice.

(viii) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(ix) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision (e.g., 52.232-38, Submission of Electronic Funds Transfer Information with Offer), contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer--Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(x) Any other information or documentation required by the contract (e.g., evidence of shipment).

(4) Interest penalty. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(4)(i) through (a)(4)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday, the designated payment office may make payment on the following working day without incurring a late payment interest penalty.

(i) The designated billing office received a proper invoice.

(ii) The Government processed a receiving report or other Government documentation authorizing payment, and there was no disagreement over quantity, quality, or Contractor compliance with any contract term or condition.

(iii) In the case of a final invoice for any balance of funds due the Contractor for supplies delivered or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(5) Computing penalty amount. The Government will compute the interest penalty in accordance with the Office of Management and Budget prompt payment regulations at 5 CFR part 1315.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor, Government acceptance is deemed to occur constructively on the 7th day (unless otherwise specified in this contract) after the Contractor delivers the supplies or performs the services in accordance with the terms and conditions of the contract, unless there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. If actual acceptance occurs within the constructive acceptance period, the Government will base the determination of an interest penalty on the actual date of acceptance. The constructive acceptance requirement does not, however, compel Government officials to accept supplies or services, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The prompt payment regulations at 5 CFR 1315.10(c) do not require the Government to pay interest penalties if payment delays are due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. The Government and the Contractor shall resolve claims involving disputes and any interest that may be payable in accordance with the clause at FAR 52.233-1, Disputes.

(6) Discounts for prompt payment. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if the Government takes a discount for prompt payment improperly. The Government will calculate the interest penalty in accordance with the prompt payment regulations at 5 CFR part 1315.

(7) Additional interest penalty. (i) The designated payment office will pay a penalty amount, calculated in accordance with the prompt payment regulations at 5 CFR part 1315 in addition to the interest penalty amount only if--

(A) The Government owes an interest penalty of $1 or more;

(B) The designated payment office does not pay the interest penalty within 10 days after the date the invoice amount is paid; and

(C) The Contractor makes a written demand to the designated payment office for additional penalty payment, in accordance with paragraph (a)(7)(ii) of this clause, postmarked not later than 40 days after the invoice amount is paid.

(ii)(A) The Contractor shall support written demands for additional penalty payments with the following data. The Government will not request any additional data. The Contractor shall--

(1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

(2) Attach a copy of the invoice on which the unpaid late payment interest is due; and

(3) State that payment of the principal has been received, including the date of receipt.

(B) If there is no postmark or the postmark is illegible--

(1) The designated payment office that receives the demand will annotate it with the date of receipt, provided the demand is received on or before the 40th day after payment was made; or

(2) If the designated payment office fails to make the required annotation, the Government will determine the demand's validity based on the date the Contractor has placed on the demand, provided such date is no later than the 40th day after payment was made.

(iii) The additional penalty does not apply to payments regulated by other Government regulations (e.g., payments under utility contracts subject to tariffs and regulation).

(b) Contract financing payment. If this contract provides for contract financing, the Government will make contract financing payments in accordance with the applicable contract financing clause.

(c) Fast payment procedure due dates. If this contract contains the clause at 52.213-1, Fast Payment Procedure, payments will be made within 15 days after the date of receipt of the invoice.

(d) Overpayments. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(End of clause)

52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER—CENTRAL CONTRACTOR REGISTRATION (OCT 2003)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term "EFT" refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for--

(i) Making a correct payment;

(ii) Paying any prompt payment penalty due; and

(iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(f) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register separately in the CCR database and shall be paid by EFT in accordance with the terms of this clause. Notwithstanding any other requirement of this contract, payment to an ultimate recipient other than the

Contractor, or a financial institution properly recognized under an assignment of claims pursuant to subpart 32.8, is not permitted. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(i) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

(End of Clause)

52.233-1 DISPUTES. (JUL 2002)

(a) This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613).

(b) Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved under this clause.

(c) Claim, as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. However, a written demand or written assertion by the Contractor seeking the payment of money exceeding $100,000 is not a claim under the Act until certified. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim under the Act. The submission may be converted to a claim under the Act, by complying with the submission and certification requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(d)(1) A claim by the Contractor shall be made in writing and, unless otherwise stated in this contract, submitted within 6 years after accrual of the claim to the Contracting Officer for a written decision. A claim by the Government against the Contractor shall be subject to a written decision by the Contracting Officer.

(2)(i) The contractors shall provide the certification specified in subparagraph (d)(2)(iii) of this clause when submitting any claim -

(A) Exceeding $100,000; or

(B) Regardless of the amount claimed, when using -

(1) Arbitration conducted pursuant to 5 U.S.C. 575-580; or

(2) Any other alternative means of dispute resolution (ADR) technique that the agency elects to handle in accordance with the Administrative Dispute Resolution Act (ADRA).

(ii) The certification requirement does not apply to issues in controversy that have not been submitted as all or part

of a claim.

(iii) The certification shall state as follows: "I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable; and that I am duly authorized to certify the claim on behalf of the Contractor.

(3) The certification may be executed by any person duly authorized to bind the Contractor with respect to the claim.

(e) For Contractor claims of $100,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of the request. For Contractor-certified claims over $100,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date by which the decision will be made.

(f) The Contracting Officer's decision shall be final unless the Contractor appeals or files a suit as provided in the Act.

(g) If the claim by the Contractor is submitted to the Contracting Officer or a claim by the Government is presented to the Contractor, the parties, by mutual consent, may agree to use alternative disput resolution (ADR). If the Contractor refuses an offer for ADR, the Contractor shall inform the Contracting Officer, in writing, of the Contractor's specific reasons for rejecting the request.

(h) The Government shall pay interest on the amount found due and unpaid from (1) the date the Contracting Officer receives the claim (certified, if required); or (2) the date that payment otherwise would be due, if that date is later, until the date of payment. With regard to claims having defective certifications, as defined in (FAR) 48 CFR 33.201, interest shall be paid from the date that the Contracting Officer initially receives the claim. Simple interest on claims shall be paid at the rate, fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which the Contracting Officer receives the claim and then at the rate applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.

(i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under the contract, and comply with any decision of the Contracting Officer.

(End of clause)

52.233-3 PROTEST AFTER AWARD (AUG. 1996)

(a) Upon receipt of a notice of protest (as defined in FAR 33.101) or a determination that a protest is likely (see FAR 33.102(d)), the Contracting Officer may, by written order to the Contractor, direct the Contractor to stop performance of the work called for by this contract. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Upon receipt of the final decision in the protest, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled either before or after a final decision in the protest, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to an adjustment within 30 days after the end of the period of work stoppage; provided, that if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon a proposal at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(e) The Government's rights to terminate this contract at any time are not affected by action taken under this clause.

(f) If, as the result of the Contractor's intentional or negligent misstatement, misrepresentation, or miscertification, a protest related to this contract is sustained, and the Government pays costs, as provided in FAR 33.102(b)(2) or 33.104(h)(1), the Government may require the Contractor to reimburse the Government the amount of such costs. In addition to any other remedy available, and pursuant to the requirements of Subpart 32.6, the Government may collect this debt by offsetting the amount against any payment due the Contractor under any contract between the Contractor and the Government.

(End of clause)

52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)

United States law will apply to resolve any claim of breach of this contract.

(End of clause)

52.242-13 BANKRUPTCY (JUL 1995)

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish, by certified mail or electronic commerce method authorized by the contract, written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting offices for all Government contracts against which final payment has not been made. This obligation remains in effect until final payment under this contract.

(End of clause)

52.243-1 CHANGES--FIXED-PRICE (APR 1984)

(a) The Contracting Officer may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract in any one or more of the following:

(1) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for the Government in accordance with the drawings, designs, or specifications.

(2) Method of shipment or packing.

(3) Place of delivery.

(b) If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, the Contracting Officer shall make an equitable adjustment in the contract price, the delivery schedule, or both, and shall modify the contract.

(c) The Contractor must assert its right to an adjustment under this clause within 30 days from the date of receipt of the written order. However, if the Contracting Officer decides that the facts justify it, the Contracting Officer may receive and act upon a proposal submitted before final payment of the contract.

(d) If the Contractor's proposal includes the cost of property made obsolete or excess by the change, the Contracting Officer shall have the right to prescribe the manner of the disposition of the property.

(e) Failure to agree to any adjustment shall be a dispute under the Disputes clause. However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

(End of clause)

52.244-6 SUBCONTRACTS FOR COMMERCIAL ITEMS (DEC 2004)

(a) Definitions.

"Commercial item", has the meaning contained in Federal Acquistion Regulation 2.101, Definitions.

"Subcontract", includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) (1) The Contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds $500,000 ($1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212(a)).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).

(v) 52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (DEC 2004) (E.O. 13201). Flow down as required in accordance with paragraph (g) of FAR clause 52.222-39).

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631) (flow down required in accordance with paragraph (d) of FAR clause 52.247-64).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

(End of clause)

52.246-18 WARRANTY OF SUPPLIES OF A COMPLEX NATURE (MAY 2001)

(f) Definitions.

"Acceptance," as used in this clause, means the act of an authorized representative of the Government by which the Government assumes for itself, or as an agent of another, ownership of existing and identified supplies, or approves specific services rendered, as partial or complete performance of the contract.

"Correction," as used in this clause, means the elimination of a defect.

"Supplies," as used in this clause, means the end items furnished by the Contractor and related services required under this contract. The word does not include "data."

(b) Contractor's obligations. (1) The Contractor warrants that for 90 days with NO alternates all supplies furnished under this contract will be free from defects in material and workmanship and will conform with all requirements of this contract; provided, however, that with respect to Government-furnished property, the Contractor's warranty shall extend only to its proper installation, unless the Contractor performs some modification or other work on the property, in which case the Contractor's warranty shall extend to the modification or other work.

(2) Any supplies or parts thereof corrected or furnished in replacement shall be subject to the conditions of this clause to the same extent as supplies initially delivered. This warranty shall be equal in duration to that set forth in paragraph (b)(1) of this clause and shall run from the date of delivery of the corrected or replaced supplies.

(3) The Contractor shall not be obligated to correct or replace supplies if the facilities, tooling, drawings, or other equipment or supplies necessary to accomplish the correction or replacement have been made unavailable to the Contractor by action of the Government. In the event that correction or replacement has been directed, the Contractor shall promptly notify the Contracting Officer, in writing, of the nonavailability.

(4) The Contractor shall also prepare and furnish to the Government data and reports applicable to any correction required (including revision and updating of all affected data called for under this contract) at no increase in the contract price.

(5) When supplies are returned to the Contractor, the Contractor shall bear the transportation costs from the place of delivery specified in the contract (irrespective of the f.o.b. point or the point of acceptance) to the Contractor's plant and return.

(6) All implied warranties of merchantability and "fitness for a particular purpose" are excluded from any obligation contained in this contract.

(c) Remedies available to the Government. (1) In the event of a breach of the Contractor's warranty in paragraph (b)(1) of this clause, the Government may, at no increase in contract price--

(i) Require the Contractor, at the place of delivery specified in the contract (irrespective of the f.o.b. point or the point of acceptance) or at the Contractor's plant, to repair or replace, at the Contractor's election, defective or nonconforming supplies; or

(ii) Require the Contractor to furnish at the Contractor's plant the materials or parts and installation instructions required to successfully accomplish the correction.

(2) If the Contracting Officer does not require correction or replacement of defective or nonconforming supplies or the Contractor is not obligated to correct or replace under paragraph (b)(3) of this clause, the Government shall be entitled to an equitable reduction in the contract price.

(3) The Contracting Officer shall notify the Contractor in writing of any breach of the warranty in paragraph (b) of this clause within 90 days with NO alternates. The Contractor shall submit to the Contracting Officer a written recommendation within 90 days with NO alternates as to the corrective action required to remedy the breach. After the notice of breach, but not later than 90 days with NO alternates after receipt of the Contractor's recommendation for corrective action, the Contracting Officer may, in writing, direct correction or replacement as in paragraph (c)(1) of this clause, and the Contractor shall, notwithstanding any disagreement regarding the existence of a breach of warranty, comply with this direction. If it is later determined that the Contractor did not breach the warranty in paragraph (b)(1) of this clause, the contract price will be equitably adjusted.

(4) If supplies are corrected or replaced, the period for notification of a breach of the Contractor's warranty in paragraph (c)(3) of this clause shall be 90 days with NO alternates from the furnishing or return by the Contractor to the Government of the corrected or replaced supplies or parts thereof, or, if correction or replacement is effected by the Contractor at a Government or other activity, for 90 days with NO alternates thereafter.

(5) The rights and remedies of the Government provided in this clause are in addition to and do not limit any rights afforded to the Government by any other clause of the contract.

(End of clause)

52.246-24 LIMITATION OF LIABILITY--HIGH-VALUE ITEMS (FEB 1997)

(a) Except as provided in paragraphs (b) through (e) below, and notwithstanding any other provision of this contract, the Contractor shall not be liable for loss of or damage to property of the Government (including the supplies delivered under this contract) that (1) occurs after Government acceptance of the supplies delivered under this contract, and (2) results from any defects or deficiencies in the supplies.

(b) The limitation of liability under paragraph (a) above shall not apply when a defect or deficiency in, or the Government's acceptance of, the supplies results from willful misconduct or lack of good faith on the part of any of the Contractor's managerial personnel. The term "Contractor's managerial personnel," as used in this clause, means the Contractor's directors, officers, and any of the Contractor's managers, superintendents, or equivalent representatives wb ho have supervision or direction of--

(1) All or substantially all of the Contractor's business;

(2) All or substantially all of the Contractor's operations at any one plant, laboratory, or separate location at which the contract is being performed; or

(3) A separate and complete major industrial operation connected with the performance of this contract.

(c) If the Contractor carries insurance, or has established a reserve for self-insurance, covering liability for loss or

damage suffered by the Government through purchase or use of the supplies required to be delivered under this contract, the Contractor shall be liable to the Government, to the extent of such insurance or reserve, for loss of or damage to property of the Government occurring after Government acceptance of, and resulting from any defects or deficiencies in, the supplies delivered under this contract.

(d)(1) This clause does not diminish the Contractor's obligations, to the extent that they arise otherwise under this contract, relating to correction, repair, replacement, or other relief for any defect or deficiency in supplies delivered under this contract.

(2) Unless this is a cost-reimbursement contract, if loss or damage occurs and correction, repair, or replacement is not feasible or desired by the Government, the Contractor shall, as determined by the Contracting Officer--

(i) Pay the Government the amount it would have cost the Contractor to make correction, repair, or replacement before the loss or damage occurred; (ii) Provide other equitable relief.

(e) This clause shall not limit or otherwise affect the Government's rights under clauses, if included in this contract, that cover--

(1) Warranty of technical data;

(2) Ground and flight risks or aircraft flight risks; or

(3) Government property.

(End of clause)

52.248-1 VALUE ENGINEERING (FEB 2000)

(a) General. The Contractor is encouraged to develop, prepare, and submit value engineering change proposals (VECP's) voluntarily. The Contractor shall share in any net acquisition savings realized from accepted VECP's, in accordance with the incentive sharing rates in paragraph (f) below.

(b) Definitions. "Acquisition savings," as used in this clause, means savings resulting from the application of a VECP to contracts awarded by the same contracting office or its successor for essentially the same unit. Acquisition savings include--

(1) Instant contract savings, which are the net cost reductions on this, the instant contract, and which are equal to the instant unit cost reduction multiplied by the number of instant contract units affected by the VECP, less the Contractor's allowable development and implementation costs;

(2) Concurrent contract savings, which are net reductions in the prices of other contracts that are definitized and ongoing at the time the VECP is accepted; and

(3) Future contract savings, which are the product of the future unit cost reduction multiplied by the number of future contract units in the sharing base. On an instant contract, future contract savings include savings on increases in quantities after VECP acceptance that are due to contract modifications, exercise of options, additional orders, and funding of subsequent year requirements on a multiyear contract.

"Collateral costs," as used in this clause, means agency cost of operation, maintenance, logistic support, or Government-furnished property.

"Collateral savings," as used in this clause, means those measurable net reductions resulting from a VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes.

"Contracting office" includes any contracting office that the acquisition is transferred to, such as another branch of the agency or another agency's office that is performing a joint acquisition action.

"Contractor's development and implementation costs," as used in this clause, means those costs the Contractor incurs on a VECP specifically in developing, testing, preparing, and submitting the VECP, as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a VECP.

"Future unit cost reduction," as used in this clause, means the instant unit cost reduction adjusted as the Contracting Officer considers necessary for projected learning or changes in quantity during the sharing period. It is calculated at the time the VECP is accepted and applies either (1) throughout the sharing period, unless the Contracting Officer decides that recalculation is necessary because conditions are significantly different from those previously anticipated or (2) to the calculation of a lump-sum payment, which cannot later be revised.

"Government costs," as used in this clause, means those agency costs that result directly from developing and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistics support. The term does not include the normal administrative costs of processing the VECP or any increase in this contract's cost or price resulting from negative instant contract savings.

"Instant contract," as used in this clause, means this contract, under which the VECP is submitted. It does not include increases in quantities after acceptance of the VECP that are due to contract modifications, exercise of options, or additional orders. If this is a multiyear contract, the term does not include quantities funded after VECP acceptance. If this contract is a fixed-price contract with prospective price redetermination, the term refers to the period for which firm prices have been established.

"Instant unit cost reduction" means the amount of the decrease in unit cost of performance (without deducting any Contractor's development or implementation costs) resulting from using the VECP on this, the instant contract. If this is a service contract, the instant unit cost reduction is normally equal to the number of hours per line-item task saved by using the VECP on this contract, multiplied by the appropriate contract labor rate.

"Negative instant contract savings" means the increase in the cost or price of this contract when the acceptance of a VECP results in an excess of the Contractor's allowable development and implementation costs over the product of the instant unit cost reduction multiplied by the number of instant contract units affected.

"Net acquisition savings" means total acquisition savings, including instant, concurrent, and future contract savings, less Government costs.

"Sharing base," as used in this clause, means the number of affected end items on contracts of the contracting office accepting the VECP.

Sharing period, as used in this clause, means the period beginning with acceptance of the first unit incorporating the VECP and ending at a calendar date or event determined by the contracting officer for each VECP.

"Unit," as used in this clause, means the item or task to which the Contracting Officer and the Contractor agree the VECP applies.

"Value engineering change proposal (VECP)" means a proposal that--

(1) Requires a change to this, the instant contract, to implement; and

(2) Results in reducing the overall projected cost to the agency without impairing essential functions or characteristics; provided, that it does not involve a change--

(i) In deliverable end item quantities only;

(ii) In research and development (R&D) end items or R&D test quantities that is due solely to results of previous testing under this contract; or

(iii) To the contract type only.

(c) VECP preparation. As a minimum, the Contractor shall include in each VECP the information described in subparagraphs (1) through (8) below. If the proposed change is affected by contractually required configuration management or similar procedures, the instructions in those procedures relating to format, identification, and priority assignment shall govern VECP preparation. The VECP shall include the following:

(1) A description of the difference between the existing contract requirement and the proposed requirement, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, the effect of the change on the end item's performance, and any pertinent objective test data.

(2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

(3) Identification of the unit to which the VECP applies.

(4) A separate, detailed cost estimate for (i) the affected portions of the existing contract requirement and (ii) the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under the Subcontracts paragraph of this clause, below.

(5) A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs.

(6) A prediction of any effects the proposed change would have on collateral costs to the agency.

(7) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

(8) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous Government actions, if known.

(d) Submission. The Contractor shall submit VECP's to the Contracting Officer, unless this contract states otherwise. If this contract is administered by other than the contracting office, the Contractor shall submit a copy of the VECP simultaneously to the Contracting Officer and to the Administrative Contracting Officer.

(e) Government action. (1) The Contracting Officer will notify the Contractor of the status of the VECP within 45 calendar days after the contracting office receives it. If additional time is required, the Contracting Officer will notify the Contractor within the 45-day period and provide the reason for the delay and the expected date of the decision. The Government will process VECP's expeditiously; however, it shall not be liable for any delay in acting upon a VECP.

(2) If the VECP is not accepted, the Contracting Officer will notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Government. The Contracting Officer may require that the Contractor provide written notification before undertaking significant expenditures for VECP effort.

(3) Any VECP may be accepted, in whole or in part, by the Contracting Officer's award of a modification to this contract citing this clause and made either before or within a reasonable time after contract performance is completed. Until such a contract modification applies a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The decision to accept or reject all or part of any VECP is a unilateral decision made solely at the discretion of the Contracting Officer.

(f) Sharing rates. If a VECP is accepted, the Contractor shall share in net acquisition savings according to the percentages shown in the table below. The percentage paid the Contractor depends upon (1) this contract's type (fixed-price, incentive, or cost-reimbursement), (2) the sharing arrangement specified in paragraph (a) above (incentive, program requirement, or a combination as delineated in the Schedule), and (3) the source of the savings (the instant contract, or concurrent and future contracts), as follows:

CONTRACTOR'S SHARE OF NET ACQUISITION SAVINGS

(Figures in percent)

Contract Type	Incentive (Voluntary)		Program Requirement (Mandatory)	
	Instant Contract Rate	Concurrent and Future Contract Rate	Instant Contract Rate	Concurrent and Future Contract Rate
Fixed-price (includes fixed-price-award-fee; excludes other fixed-price incentive contracts)	(1) 50	(1) 50	(1) 25	25
Incentive (fixed-price or cost) (other than award fee)	(2)	(1) 50	(2)	25
Cost-reimbursement (includes cost-plus-award-fee; excludes other cost-type incentive Contracts)	(3) 25	(3) 25	15	15

(1) The Contracting Officer may increase the Contractor's sharing rate to as high as 75 percent for each VECP.

(2) Same sharing arrangement as the contract's profit or fee adjustment formula.

(3) The Contracting Officer may increase the Contractor's sharing rate to as high as 50 percent for each VECP.

(g) Calculating net acquisition savings.

(1) Acquisition savings are realized when (i) the cost or price is reduced on the instant contract, (ii) reductions are negotiated in concurrent contracts, (iii) future contracts are awarded, or (iv) agreement is reached on a lump-sum payment for future contract savings (see subparagraph (i)(4) below). Net acquisition savings are first realized, and the Contractor shall be paid a share, when Government costs and any negative instant contract savings have been fully offset against acquisition savings.

(2) Except in incentive contracts, Government costs and any price or cost increases resulting from negative instant contract savings shall be offset against acquisition savings each time such savings are realized until they are fully offset. Then, the Contractor's share is calculated by multiplying net acquisition savings by the appropriate Contractor's percentage sharing rate (see paragraph (f) above). Additional Contractor shares of net acquisition savings shall be paid to the Contractor at the time realized.

(3) If this is an incentive contract, recovery of Government costs on the instant contract shall be deferred and offset against concurrent and future contract savings. The Contractor shall share through the contract incentive structure in savings on the instant contract items affected. Any negative instant contract savings shall be added to the target cost or to the target price and ceiling price, and the amount shall be offset against concurrent and future contract savings.

(4) If the Government does not receive and accept all items on which it paid the Contractor's share, the Contractor shall reimburse the Government for the proportionate share of these payments.

(h) Contract adjustment. The modification accepting the VECP (or a subsequent modification issued as soon as possible after any negotiations are completed) shall--

(1) Reduce the contract price or estimated cost by the amount of instant contract savings, unless this is an incentive contract;

(2) When the amount of instant contract savings is negative, increase the contract price, target price and ceiling price, target cost, or estimated cost by that amount;

(3) Specify the Contractor's dollar share per unit on future contracts, or provide the lump-sum payment;

(4) Specify the amount of any Government costs or negative instant contract savings to be offset in determining net acquisition savings realized from concurrent or future contract savings; and

(5) Provide the Contractor's share of any net acquisition savings under the instant contract in accordance with the following:

(i) Fixed-price contracts--add to contract price.

(ii) Cost-reimbursement contracts--add to contract fee.

(i) Concurrent and future contract savings.

(1) Payments of the Contractor's share of concurrent and future contract savings shall be made by a modification to the instant contract in accordance with subparagraph (h)(5) above. For incentive contracts, shares shall be added as a separate firm-fixed-price line item on the instant contract. The Contractor shall maintain records adequate to identify the first delivered unit for 3 years after final payment under this contract.

(2) The Contracting Officer shall calculate the Contractor's share of concurrent contract savings by (i) subtracting from the reduction in price negotiated on the concurrent contract any Government costs or negative instant contract savings not yet offset and (ii) multiplying the result by the Contractor's sharing rate.

(3) The Contracting Officer shall calculate the Contractor's share of future contract savings by (i) multiplying the future unit cost reduction by the number of future contract units scheduled for delivery during the sharing period, (ii) subtracting any Government costs or negative instant contract savings not yet offset, and (iii) multiplying the result by the Contractor's sharing rate.

(4) When the Government wishes and the Contractor agrees, the Contractor's share of future contract savings may be paid in a single lump sum rather than in a series of payments over time as future contracts are awarded. Under this

alternate procedure, the future contract savings may be calculated when the VECP is accepted, on the basis of the Contracting Officer's forecast of the number of units that will be delivered during the sharing period. The Contractor's share shall be included in a modification to this contract (see subparagraph (h)(3) above) and shall not be subject to subsequent adjustment.

(5) Alternate no-cost settlement method. When, in accordance with subsection 48.104-4 of the Federal Acquisition Regulation, the Government and the Contractor mutually agree to use the no-cost settlement method, the following applies:

(i) The Contractor will keep all the savings on the instant contract and on its concurrent contracts only.

(ii) The Government will keep all the savings resulting from concurrent contracts placed on other sources, savings from all future contracts, and all collateral savings.

(j) Collateral savings. If a VECP is accepted, the Contracting Officer will increase the instant contract amount, as specified in paragraph (h)(5) of this clause, by a rate from 20 to 100 percent, as determined by the Contracting Officer, of any projected collateral savings determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings will not exceed the contract's firm-fixed-price, target price, target cost, or estimated cost, at the time the VECP is accepted, or $100,000, whichever is greater. The Contracting Officer will be the sole determiner of the amount of collateral savings.

(k) Relationship to other incentives. Only those benefits of an accepted VECP not rewardable under performance, design-to-cost (production unit cost, operating and support costs, reliability and maintainability), or similar incentives shall be rewarded under this clause. However, the targets of such incentives affected by the VECP shall not be adjusted because of VECP acceptance. If this contract specifies targets but provides no incentive to surpass them, the value engineering sharing shall apply only to the amount of achievement better than target.

(l) Subcontracts. The Contractor shall include an appropriate value engineering clause in any subcontract of $100,000 or more and may include one in subcontracts of lesser value. In calculating any adjustment in this contract's price for instant contract savings (or negative instant contract savings), the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs, and any value engineering incentive payments to a subcontractor, clearly resulting from a VECP accepted by the Government under this contract. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that the payments shall not reduce the Government's share of concurrent or future contract savings or collateral savings.

(m) Data. The Contractor may restrict the Government's right to use any part of a VECP or the supporting data by marking the following legend on the affected parts:

"These data, furnished under the Value Engineering clause of contract TBD , shall not be disclosed outside the Government or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under the clause. This restriction does not limit the Government's right to use information contained in these data if it has been obtained or is otherwise available from the Contractor or from another source without limitations."

If a VECP is accepted, the Contractor hereby grants the Government unlimited rights in the VECP and supporting data, except that, with respect to data qualifying and submitted as limited rights technical data, the Government shall have the rights specified in the contract modification implementing the VECP and shall appropriately mark the data. (The terms "unlimited rights" and "limited rights" are defined in Part 27 of the Federal Acquisition Regulation.)

(End of clause)

52.249-2 TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (MAY 2004)

(a) The Government may terminate performance of work under this contract in whole or, from time to time, in part if the Contracting Officer determines that a termination is in the Government's interest. The Contracting Officer shall terminate by delivering to the Contractor a Notice of Termination specifying the extent of termination and the effective date.

(b) After receipt of a Notice of Termination, and except as directed by the Contracting Officer, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this clause:

(1) Stop work as specified in the notice.

(2) Place no further subcontracts or orders (referred to as subcontracts in this clause) for materials, services, or facilities, except as necessary to complete the continued portion of the contract.

(3) Terminate all subcontracts to the extent they relate to the work terminated.

(4) Assign to the Government, as directed by the Contracting Officer, all right, title, and interest of the Contractor under the subcontracts terminated, in which case the Government shall have the right to settle or to pay any termination settlement proposal arising out of those terminations.

(5) With approval or ratification to the extent required by the Contracting Officer, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this clause.

(6) As directed by the Contracting Officer, transfer title and deliver to the Government (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the work terminated, and (ii) the completed or partially completed plans, drawings, information, and other property that, if the contract had been completed, would be required to be furnished to the Government.

(7) Complete performance of the work not terminated.

(8) Take any action that may be necessary, or that the Contracting Officer may direct, for the protection and preservation of the property related to this contract that is in the possession of the Contractor and in which the Government has or may acquire an interest.

(9) Use its best efforts to sell, as directed or authorized by the Contracting Officer, any property of the types referred to in subparagraph (b)(6) of this clause; provided, however, that the Contractor (i) is not required to extend credit to any purchaser and (ii) may acquire the property under the conditions prescribed by, and at prices approved by, the Contracting Officer. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by the Government under this contract, credited to the price or cost of the work, or paid in any other manner directed by the Contracting Officer.

(c) The Contractor shall submit complete termination inventory schedules no later than 120 days from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 120-day period.

(d) After expiration of the plant clearance period as defined in Subpart 49.001 of the Federal Acquisition Regulation, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of termination inventory not previously disposed of, excluding items authorized for disposition by the Contracting Officer. The Contractor may request the Government to remove those items or enter into an agreement for their storage. Within 15 days, the Government will accept title to those items and remove them or enter into a storage agreement. The

Contracting Officer may verify the list upon removal of the items, or if stored, within 45 days from submission of the list, and shall correct the list, as necessary, before final settlement.

(e) After termination, the Contractor shall submit a final termination settlement proposal to the Contracting Officer in the form and with the certification prescribed by the Contracting Officer. The Contractor shall submit the proposal promptly, but no later than 1 year from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 1-year period. However, if the Contracting Officer determines that the facts justify it, a termination settlement proposal may be received and acted on after 1 year or any extension. If the Contractor fails to submit the proposal within the time allowed, the Contracting Officer may determine, on the basis of information available, the amount, if any, due the Contractor because of the termination and shall pay the amount determined.

(f) Subject to paragraph (e) of this clause, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount to be paid or remaining to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. However, the agreed amount, whether under this paragraph (g) or paragraph (g) of this clause, exclusive of costs shown in subparagraph (g)(3) of this clause, may not exceed the total contract price as reduced by (1) the amount of payments previously made and (2) the contract price of work not terminated. The contract shall be modified, and the Contractor paid the agreed amount. Paragraph (g) of this clause shall not limit, restrict, or affect the amount that may be agreed upon to be paid under this paragraph.

(g) If the Contractor and the Contracting Officer fail to agree on the whole amount to be paid because of the termination of work, the Contracting Officer shall pay the Contractor the amounts determined by the Contracting Officer as follows, but without duplication of any amounts agreed on under paragraph (f) of this clause:

(1) The contract price for completed supplies or services accepted by the Government (or sold or acquired under subparagraph (b)(9) of this clause) not previously paid for, adjusted for any saving of freight and other charges.

(2) The total of--

(i) The costs incurred in the performance of the work terminated, including initial costs and preparatory expense allocable thereto, but excluding any costs attributable to supplies or services paid or to be paid under subparagraph (f)(1) of this clause;

(ii) The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the contract if not included in subdivision (g)(2)(i) of this clause; and

(iii) A sum, as profit on subdivision (g)(2)(i) of this clause, determined by the Contracting Officer under 49.202 of the Federal Acquisition Regulation, in effect on the date of this contract, to be fair and reasonable; however, if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, the Contracting Officer shall allow no profit under this subdivision (iii) and shall reduce the settlement to reflect the indicated rate of loss.

(3) The reasonable costs of settlement of the work terminated, including--

(i) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data;

(ii) The termination and settlement of subcontracts (excluding the amounts of such settlements); and

(iii) Storage, transportation, and other costs incurred, reasonably necessary for the preservation, protection, or disposition of the termination inventory.

(h) Except for normal spoilage, and except to the extent that the Government expressly assumed the risk of loss, the Contracting Officer shall exclude from the amounts payable to the Contractor under paragraph (g) of this clause, the

fair value, as determined by the Contracting Officer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government or to a buyer.

(i) The cost principles and procedures of Part 31 of the Federal Acquisition Regulation, in effect on the date of this contract, shall govern all costs claimed, agreed to, or determined under this clause.

(j) The Contractor shall have the right of appeal, under the Disputes clause, from any determination made by the Contracting Officer under paragraph (e), (g), or (l) of this clause, except that if the Contractor failed to submit the termination settlement proposal or request for equitable adjustment within the time provided in paragraph (e) or (l), respectively, and failed to request a time extension, there is no right of appeal.

(k) In arriving at the amount due the Contractor under this clause, there shall be deducted--

(1) All unliquidated advance or other payments to the Contractor under the terminated portion of this contract;

(2) Any claim which the Government has against the Contractor under this contract; and

(3) The agreed price for, or the proceeds of sale of, materials, supplies, or other things acquired by the Contractor or sold under the provisions of this clause and not recovered by or credited to the Government.

(l) If the termination is partial, the Contractor may file a proposal with the Contracting Officer for an equitable adjustment of the price(s) of the continued portion of the contract. The Contracting Officer shall make any equitable adjustment agreed upon. Any proposal by the Contractor for an equitable adjustment under this clause shall be requested within 90 days from the effective date of termination unless extended in writing by the Contracting Officer.

(m)(1) The Government may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Contractor for the terminated portion of the contract, if the Contracting Officer believes the total of these payments will not exceed the amount to which the Contractor will be entitled.

(2) If the total payments exceed the amount finally determined to be due, the Contractor shall repay the excess to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury under 50 U.S.C. App. 1215(b)(2). Interest shall be computed for the period from the date the excess payment is received by the Contractor to the date the excess is repaid. Interest shall not be charged on any excess payment due to a reduction in the Contractor's termination settlement proposal because of retention or other disposition of termination inventory until 10 days after the date of the retention or disposition, or a later date determined by the Contracting Officer because of the circumstances.

(n) Unless otherwise provided in this contract or by statute, the Contractor shall maintain all records and documents relating to the terminated portion of this contract for 3 years after final settlement. This includes all books and other evidence bearing on the Contractor's costs and expenses under this contract. The Contractor shall make these records and documents available to the Government, at the Contractor's office, at all reasonable times, without any direct charge. If approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

(End of clause)

52.249-8 DEFAULT (FIXED-PRICE SUPPLY AND SERVICE) (APR 1984)

(a)(1) The Government may, subject to paragraphs (c) and (d) of this clause, by written notice of default to the Contractor, terminate this contract in whole or in part if the Contractor fails to--

(i) Deliver the supplies or to perform the services within the time specified in this contract or any extension;

(ii) Make progress, so as to endanger performance of this contract (but see subparagraph (a)(2) of this clause); or

(iii) Perform any of the other provisions of this contract (but see subparagraph (a)(2) below).

(2) The Government's right to terminate this contract under subdivisions (a)(1)(ii) and (1)(iii) of this clause, may be exercised if the Contractor does not cure such failure within 10 days (or more if authorized in writing by the Contracting Officer) after receipt of the notice from the Contracting Officer specifying the failure.

(b) If the Government terminates this contract in whole or in part, it may acquire, under the terms and in the manner the Contracting Officer considers appropriate, supplies or services similar to those terminated, and the Contractor will be liable to the Government for any excess costs for those supplies or services. However, the Contractor shall continue the work not terminated.

(c) Except for defaults of subcontractors at any tier, the Contractor shall not be liable for any excess costs if the failure to perform the contract arises from causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (1) acts of God or of the public enemy, (2) acts of the Government in either its sovereign or contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather. In each instance the failure to perform must be beyond the control and without the fault or negligence of the Contractor.

(d) If the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either, the Contractor shall not be liable for any excess costs for failure to perform, unless the subcontracted supplies or services were obtainable from other sources in sufficient time for the Contractor to meet the required delivery schedule.

(e) If this contract is terminated for default, the Government may require the Contractor to transfer title and deliver to the Government, as directed by the Contracting Officer, any (1) completed supplies, and (2) partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (collectively referred to as "manufacturing materials" in this clause) that the Contractor has specifically produced or acquired for the terminated portion of this contract. Upon direction of the Contracting Officer, the Contractor shall also protect and preserve property in its possession in which the Government has an interest.

(f) The Government shall pay contract price for completed supplies delivered and accepted. The Contractor and Contracting Officer shall agree on the amount of payment for manufacturing materials delivered and accepted and for the protection and preservation of the property. Failure to agree will be a dispute under the Disputes clause. The Government may withhold from these amounts any sum the Contracting Officer determines to be necessary to protect the Government against loss because of outstanding liens or claims of former lien holders.

(g) If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Government.

(h) The rights and remedies of the Government in this clause are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) "Definition. Contracting officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

(End of clause)

252.203-7001 PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE-CONTRACT-RELATED FELONIES (DEC 2004)

(a) Definitions. As used in this clause—

(1) "Arising out of a contract with the DoD" means any act in connection with—

(i) Attempting to obtain;

(ii) Obtaining, or

(iii) Performing a contract or first-tier subcontract of any agency, department, or component of the Department of Defense (DoD).

(2) "Conviction of fraud or any other felony" means any conviction for fraud or a felony in violation of state or Federal criminal statutes, whether entered on a verdict or plea, including a plea of nolo contendere, for which sentence has been imposed.

(3) "Date of conviction" means the date judgment was entered against the individual.

(b) Any individual who is convicted after September 29, 1988, of fraud or any other felony arising out of a contract with the DoD is prohibited from serving--

(1) In a management or supervisory capacity on this contract;

(2) On the board of directors of the Contractor;

(3) As a consultant, agent, or representative for the Contractor; or

(4) In any other capacity with the authority to influence, advise, or control the decisions of the Contractor with regard to this contract.

(c) Unless waived, the prohibition in paragraph (b) of this clause applies for not less than 5 years from the date of conviction.

(d) 10 U.S.C. 2408 provides that the Contractor shall be subject to a criminal penalty of not more than $500,000 if convicted of knowingly--

(1) Employing a person under a prohibition specified in paragraph (b) of this clause; or

(2) Allowing such a person to serve on the board of directors of the contractor or first-tier subcontractor.

(e) In addition to the criminal penalties contained in 10 U.S.C. 2408, the Government may consider other available remedies, such as—

(1) Suspension or debarment;

(2) Cancellation of the contract at no cost to the Government; or

(3) Termination of the contract for default.

(f) The Contractor may submit written requests for waiver of the prohibition in paragraph (b) of this clause to the Contracting Officer. Requests shall clearly identify—

(1) The person involved;

(2) The nature of the conviction and resultant sentence or punishment imposed;

(3) The reasons for the requested waiver; and

(4) An explanation of why a waiver is in the interest of national security.

(g) The Contractor agrees to include the substance of this clause, appropriately modified to reflect the identity and relationship of the parties, in all first-tier subcontracts exceeding the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation, except those for commercial items or components.

(h) Pursuant to 10 U.S.C. 2408(c), defense contractors and subcontractors may obtain information as to whether a particular person has been convicted of fraud or any other felony arising out of a contract with the DoD by contacting The Office of Justice Programs, The Denial of Federal Benefits Office, U.S. Department of Justice, telephone (301) 809-4904.

(End of clause)

252.203-7002 DISPLAY OF DOD HOTLINE POSTER (DEC 1991)

(a) The Contractor shall display prominently in common work areas within business segments performing work under Department of Defense (DoD) contracts, DoD Hotline Posters prepared by the DoD Office of the Inspector General.

(b) DoD Hotline Posters may be obtained from the DoD Inspector General, ATTN: Defense Hotline, 400 Army Navy Drive, Washington, DC 22202-2884.

(g) The Contractor need not comply with paragraph (a) of this clause if it has established a mechanism, such as a hotline, by which employees may report suspected instances of improper conduct, and instructions that encourage employees to make such reports.

(End of clause)

252.204-7003 CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT (APR 1992)

The Contractor's procedures for protecting against unauthorized disclosure of information shall not require Department of Defense employees or members of the Armed Forces to relinquish control of their work products, whether classified or not, to the contractor.

(End of clause)

252.204-7004 CENTRAL CONTRACTOR REGISTRATION (52.204-7) ALTERNATE A (NOV 2003)

(a) Definitions. As used in this clause--

“Central Contractor Registration (CCR) database” means the primary Government repository for contractor information required for the conduct of business with the Government.

“Commercial and Government Entity (CAGE) code” means--

(1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an “NCAGE code.”

“Data Universal Numbering System (DUNS) number” means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

“Data Universal Numbering System +4 (DUNS+4) number” means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

“Registered in the CCR database” means that--

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Contractor's CAGE code is in the CCR database; and

(3) The Government has validated all mandatory data fields and has marked the records “Active.”

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number-

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g)
(1)
(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at http://www.ccr.gov or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

252.205-7000 PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS (DEC 1991)

(a) Definition.

"Cooperative agreement holder" means a State or local government; a private, nonprofit organization; a tribal organization (as defined in section 4(c) of the Indian Self-Determination and Education Assistance Act (Pub. L. 93-268; 25 U.S.C. 450 (c))); or an economic enterprise (as defined in section 3(e) of the Indian Financing Act of 1974 (Pub. L. 93-362; 25 U.S.C. 1452(e))) whether such economic enterprise is organized for profit or nonprofit purposes; which has an agreement with the Defense Logistics Agency to furnish procurement technical assistance to business entities.

(b) The Contractor shall provide cooperative agreement holders, upon their request, with a list of those appropriate employees or offices responsible for entering into subcontracts under defense contracts. The list shall include the business address, telephone number, and area of responsibility of each employee or office.

(c) The Contractor need not provide the listing to a particular cooperative agreement holder more frequently than once a year.

(End of clause)

252.209-7000 ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ONSITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY (NOV 1995)

(a) The Contractor shall not deny consideration for a subcontract award under this contract to a potential subcontractor subject to on-site inspection under the INF Treaty, or a similar treaty, solely or in part because of the actual or potential presence of Soviet inspectors at the subcontractor's facility, unless the decision is approved by the Contracting Officer.

(b) The Contractor shall incorporate this clause, including this paragraph (b), in all solicitations and contracts exceeding the simplified acquisition threshold in part 13 of the Federal Acquisition Regulation, except those for commercial items.

(End of clause)

252.209-7004 SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

(a) Unless the Government determines that there is a compelling reason to do so, the Contractor shall not enter into any subcontract in excess of $25,000 with a firm, or subsidiary of a firm, that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country.

(b) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country. The notice must include the name of the proposed subcontractor notwithstanding its inclusion on the List of Parties Excluded From Federal Procurement and Nonprocurement Programs.

(End of clause)

252.215-7000 PRICING ADJUSTMENTS (DEC 1991)

The term "pricing adjustment," as used in paragraph (a) of the clauses entitled "Price Reduction for Defective Cost or Pricing Data - Modifications," "Subcontractor Cost or Pricing Data," and "Subcontractor Cost or Pricing Data - Modifications," means the aggregate increases and/or decreases in cost plus applicable profits.

(End of clause)

252.219-7003 SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS) (APR. 1996)

This clause supplements the Federal Acquisition Regulation 52.219-9, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan, clause of this contract.

(a) *Definitions. Historically black colleges and universities,* as used in this clause, means institutions determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. The term also means any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institutions, as used in this clause, means institutions meeting the requirements of section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)). The term also includes Hispanic-serving institutions as defined in section 316(b)(1) of such Act (20 U.S.C. 1059c(b)(1)).

(b) Except for company or division-wide commercial items subcontracting plans, the term *small disadvantaged business,* when used in the FAR 52.219-9 clause, includes historically black colleges and universities and minority institutions, in addition to small disadvantaged business concerns.

(c) Work under the contract or its subcontracts shall be credited toward meeting the small disadvantaged business concern goal required by paragraph (d) of the FAR 52.219-9 clause when:

(1) It is performed on Indian lands or in joint venture with an Indian tribe or a tribally-owned corporation, and

(2) It meets the requirements of 10 U.S.C. 2323a.

(d) Subcontracts awarded to workshops approved by the Committee for Purchase from People Who are Blind or Severely Disabled (41 U.S.C. 46-48), may be counted toward the Contractor's small business subcontracting goal.

(e) A mentor firm, under the Pilot Mentor-Protege Program established under Section 831 of Pub. L. 101-510, as amended, may count toward its small disadvantaged business goal, subcontracts awarded--

(f) The master plan approval referred to in paragraph (f) of the FAR 52.219-9 clause is approval by the Contractor's cognizant contract administration activity.

(g) In those subcontracting plans which specifically identify small, small disadvantaged, and women-owned small businesses, the Contractor shall notify the Administrative Contracting Officer of any substitutions of firms that are not small, small disadvantaged, or women-owned small businesses for the firms listed in the subcontracting plan. Notifications shall be in writing and shall occur within a reasonable period of time after award of the subcontract. Contractor-specified formats shall be acceptable.

(End of clause)

252.223-7006 PROHIBITION ON STORAGE AND DISPOSAL OF TOXIC AND HAZARDOUS MATERIALS (APR 1993)

(a) "Definitions".

As used in this clause --

(1) "Storage" means a non-transitory, semi-permanent or permanent holding, placement, or leaving of material. It does not include a temporary accumulation of a limited quantity of a material used in or a waste generated or resulting from authorized activities, such as servicing, maintenance, or repair of Department of Defense (DoD) items, equipment, or facilities.

(2) "Toxic or hazardous materials" means:

(i) Materials referred to in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601(14)) and materials designated under section 102 of CERCLA (42 U.S.C. 9602) (40 CFR part 302);

(ii) Materials that are of an explosive, flammable, or pyrotechnic nature; or

(iii) Materials otherwise identified by the Secretary of Defense as specified in DoD regulations.

(b) In accordance with 10 U.S.C. 2692, the Contractor is prohibited from storing or disposing of non-DoD-owned toxic or hazardous materials on a DoD installation, except to the extent authorized by a statutory exception to 10 U.S.C. 2692 or as authorized by the Secretary of Defense or his designee.

(End of clause)

252.225-7012 Preference for Certain Domestic Commodities (JUN 2004)

(a) Definitions. As used in this clause--

(1) Component means any item supplied to the Government as part of an end product or of another component.

(2) End product means supplies delivered under a line item of this contract.

(3) United States means the 50 States, the District of Columbia, and outlying areas.

(4) U.S.-flag vessel means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b) The Contractor shall deliver under this contract only such of the following items, either as end products or components, that have been grown, reprocessed, reused, or produced in the United States:

(1) Food.

(2) Clothing.

(3) Tents, tarpaulins, or covers.

(4) Cotton and other natural fiber products.

(5) Woven silk or woven silk blends.

(6) Spun silk yarn for cartridge cloth.

(7) Synthetic fabric, and coated synthetic fabric, including all textile fibers and yarns that are for use in such fabrics.

(8) Canvas products.

(9) Wool (whether in the form of fiber or yarn or contained in fabrics, materials, or manufactured articles).

(10) Any item of individual equipment (Federal Supply Class 8465) manufactured from or containing fibers, yarns, fabrics, or materials listed in this paragraph (b).

(c) This clause does not apply--

(1) To items listed in section 25.104(a) of the Federal Acquisition Regulation (FAR), or other items for which the Government has determined that a satisfactory quality and sufficient quantity cannot be acquired as and when needed at U.S. market prices;

(2) To end products incidentally incorporating cotton, other natural fibers, or wool, for which the estimated value of the cotton, other natural fibers, or wool--

(i) Is not more than 10 percent of the total price of the end product; and (ii) Does not exceed the simplified acquisition threshold in FAR part 2;

(3) To waste and byproducts of cotton or wool fiber for use in the production of propellants and explosives;

(4) To foods, other than fish, shellfish, or seafood, that have been manufactured or processed in the United States, regardless of where the foods (and any component if applicable) were grown or produced. Fish, shellfish, or seafood manufactured or processed in the United States and fish, shellfish, or seafood contained in foods manufactured or processed in the United States shall be provided in accordance with paragraph (d) of this clause;

(5) To chemical warfare protective clothing produced in the countries listed in subsection 225.872-1 of the Defense FAR Supplement; or

(6) To fibers and yarns that are for use in synthetic fabric or coated synthetic fabric (but does apply to the synthetic or coated synthetic fabric itself), if--

(i) The fabric is to be used as a component of an end product that is not a textile product. Examples of textile products, made in whole or in part of fabric, include--

(A) Draperies, floor coverings, furnishings, and bedding (Federal Supply Group 72, Household and Commercial Furnishings and Appliances);

(B) Items made in whole or in part of fabric in Federal Supply Group 83, Textile/leather/furs/apparel/findings/ tents/flags, or Federal Supply Group 84, Clothing, Individual Equipment and Insignia;

(C) Upholstered seats (whether for household, office, or other use); and

(D) Parachutes (Federal Supply Class 1670); or

(ii) The fibers and yarns are para-aramid fibers and yarns manufactured in the Netherlands.

(d)(1) Fish, shellfish, and seafood delivered under this contract, or contained in foods delivered under this contract--

(i) Shall be taken from the sea by U.S.-flag vessels; or

(ii) If not taken from the sea, shall be obtained from fishing within the United States; and

(2) Any processing or manufacturing of the fish, shellfish, or seafood shall be performed on a U.S.-flag vessel or in the United States.

(End of clause)

252.225-7013 DUTY-FREE ENTRY (JAN 2005)

(a) Definitions. As used in this clause--

(1) Customs territory of the United States means the States, the District of Columbia, and Puerto Rico.

(2) Eligible product means--

(i) Designated country end product as defined in the Trade Agreements clause of this contract;

(ii) Free Trade Agreement country end product as defined in the Trade Agreements clause of this contract;

(iii) End product of Australia, Canada, Chile, Mexico, or Singapore as defined in the Buy American Act--Free Trade Agreements--Balance of Payments Program clause of this contract; or

(iv) Canadian end product as defined in Alternate I of the Buy American Act--Free Trade Agreements--Balance of Payments Program clause of this contract.

(3) Qualifying country and qualifying country end product have the meanings given in the Trade Agreements clause, the Buy American Act and Balance of Payments Program clause, or the Buy American Act--Free Trade Agreements--Balance of Payments Program clause of this contract.

(b) Except as provided in paragraph (i) of this clause, or unless supplies were imported into the United States before the date of this contract or the applicable subcontract, the price of this contract shall not include any amount for duty on--

(1) End items that are eligible products or qualifying country end products;

(2) Components (including, without limitation, raw materials and intermediate assemblies) produced or made in qualifying countries, that are to be incorporated in U.S.-made end products to be delivered under this contract; or

(3) Other supplies for which the Contractor estimates that duty will exceed $200 per shipment into the customs territory of the United States.

(c) The Contractor shall--

(1) Claim duty-free entry only for supplies that the Contractor intends to deliver to the Government under this contract, either as end items or components of end items; and

(2) Pay duty on supplies, or any portion thereof, that are diverted to nongovernmental use, other than--

(i) Scrap or salvage; or

(ii) Competitive sale made, directed, or authorized by the Contracting Officer.

(d) Except as the Contractor may otherwise agree, the Government will execute duty-free entry certificates and will afford such assistance as appropriate to obtain the duty-free entry of supplies--

(1) For which no duty is included in the contract price in accordance with paragraph (b) of this clause; and

(2) For which shipping documents bear the notation specified in paragraph (e) of this clause.

(e) For foreign supplies for which the Government will issue duty-free entry certificates in accordance with this clause, shipping documents submitted to Customs shall--

(1) Consign the shipments to the appropriate--

(i) Military department in care of the Contractor, including the Contractor's delivery address; or

(ii) Military installation; and

(2) Include the following information:

(i) Prime contract number and, if applicable, delivery order number.

(ii) Number of the subcontract for foreign supplies, if applicable.

(iii) Identification of the carrier.

(iv) (A) For direct shipments to a U.S. military installation, the notation: ``UNITED STATES GOVERNMENT, DEPARTMENT OF DEFENSE Duty-Free Entry to be claimed pursuant to Section XXII, Chapter 98, Subchapter VIII, Item 9808.00.30 of the Harmonized Tariff Schedule of the United States. Upon arrival of shipment at the appropriate port of entry, District Director of Customs, please release shipment under 19 CFR part 142 and notify Commander, Defense Contract Management Agency (DCMA) New York, ATTN: Customs Team, DCMAE-GNTF, 207 New York Avenue, Staten Island, New York, 10305-5013, for execution of Customs Form 7501, 7501A, or 7506 and any required duty-free entry certificates."

(B) If the shipment will be consigned to other than a military installation, e.g., a domestic contractor's plant, the shipping document notation shall be altered to include the name and address of the contractor, agent, or broker who

will notify Commander, DCMA New York, for execution of the duty-free entry certificate. (If the shipment will be consigned to a contractor's plant and no duty-free entry certificate is required due to a trade agreement, the Contractor shall claim duty-free entry under the applicable trade agreement and shall comply with the U.S. Customs Service requirements. No notification to Commander, DCMA New York, is required.)

(v) Gross weight in pounds (if freight is based on space tonnage, state cubic feet in addition to gross shipping weight).

(vi) Estimated value in U.S. dollars.

(vii) Activity address number of the contract administration office administering the prime contract, e.g., for DCMA Dayton, S3605A.

(f) Preparation of customs forms.

(1)(i) Except for shipments consigned to a military installation, the Contractor shall--

(A) Prepare any customs forms required for the entry of foreign supplies into the United States in connection with this contract; and

(B) Submit the completed customs forms to the District Director of Customs, with a copy to DCMA NY for execution of any required duty-free entry certificates.

(ii) Shipments consigned directly to a military installation will be released in accordance with sections 10.101 and 10.102 of the U.S. Customs regulations.

(2) For shipments containing both supplies that are to be accorded duty-free entry and supplies that are not, the Contractor shall identify on the customs forms those items that are eligible for duty-free entry.

(g) The Contractor shall--

(1) Prepare (if the Contractor is a foreign supplier), or shall instruct the foreign supplier to prepare, a sufficient number of copies of the bill of lading (or other shipping document) so that at least two of the copies accompanying the shipment will be available for use by the District Director of Customs at the port of entry;

(2) Consign the shipment as specified in paragraph (e) of this clause; and

(3) Mark on the exterior of all packages--

(i) ``UNITED STATES GOVERNMENT, DEPARTMENT OF DEFENSE''; and

(ii) The activity address number of the contract administration office administering the prime contract.

(h) The Contractor shall notify the Administrative Contracting Officer (ACO) in writing of any purchase of eligible products or qualifying country supplies to be accorded duty-free entry, that are to be imported into the United States for delivery to the Government or for incorporation in end items to be delivered to the Government. The Contractor shall furnish the notice to the ACO immediately upon award to the supplier and shall include in the notice--

(1) The Contractor's name, address, and Commercial and Government Entity (CAGE) code;

(2) Prime contract number and, if applicable, delivery order number;

(3) Total dollar value of the prime contract or delivery order;

(4) Date of the last scheduled delivery under the prime contract or delivery order;

(5) Foreign supplier's name and address;

(6) Number of the subcontract for foreign supplies;

(7) Total dollar value of the subcontract for foreign supplies;

(8) Date of the last scheduled delivery under the subcontract for foreign supplies;

(9) List of items purchased;

(10) An agreement that the Contractor will pay duty on supplies, or any portion thereof, that are diverted to nongovernmental use other than--

(i) Scrap or salvage; or

(ii) Competitive sale made, directed, or authorized by the Contracting Officer;

(11) Country of origin; and

(12) Scheduled delivery date(s).

(i) This clause does not apply to purchases of qualifying country supplies in connection with this contract if--

(1) This clause does not apply to purchases of eligible products or qualifying country supplies in connection with this contract if--

(2) It is not economical or feasible to account for such supplies so as to ensure that the amount of the supplies for which duty-free entry is claimed does not exceed the amount purchased in connection with this contract.

(j) The Contractor shall--

(1) Insert the substance of this clause, including this paragraph (j), in all subcontracts for--

(i) Qualifying country components; or

(ii) Nonqualifying country components for which the Contractor estimates that duty will exceed $200 per unit;

(2) Require subcontractors to include the number of this contract on all shipping documents submitted to Customs for supplies for which duty-free entry is claimed pursuant to this clause; and

(3) Include in applicable subcontracts--

(i) The name and address of the ACO for this contract;

(ii) The name, address, and activity address number of the contract administration office specified in this contract; and

(iii) The information required by paragraphs (h)(1), (2), and (3) of this clause.

(End of clause)

252.225-7014 PREFERENCE FOR DOMESTIC SPECIALTY METALS (APR 2003)

(a) Definitions. As used in this clause--

(1) Qualifying country means any country listed in subsection 225.872-1 of the Defense Federal Acquisition Regulation Supplement.

(2) Specialty metals means--

(i) Steel--

(A) With a maximum alloy content exceeding one or more of the following limits: manganese, 1.65 percent; silicon, 0.60 percent; or copper, 0.60 percent; or

(B) Containing more than 0.25 percent of any of the following elements: aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, or vanadium;

(ii) Metal alloys consisting of nickel, iron-nickel, and cobalt base alloys containing a total of other alloying metals (except iron) in excess of 10 percent;

(iii) Titanium and titanium alloys; or

(iv) Zirconium and zirconium base alloys.

(b) Any specialty metals incorporated in articles delivered under this contract shall be melted in the United States, its possessions, or Puerto Rico.

(c) This clause does not apply to specialty metals --

(1) Melted in a qualifying country or incorporated in an article manufactured in a qualifying country; or

(2) Purchased by a subcontractor at any tier.

(End of clause)

252.225-7021 TRADE AGREEMENTS (JAN 2005)

(a) Definitions. As used in this clause--

(1) Caribbean Basin country end product--

(i) Means an article that--

(A) Is wholly the growth, product, or manufacture of a Caribbean Basin country; or

(B) In the case of an article that consists in whole or in part of materials from another country or instrumentality, has been substantially transformed in a Caribbean Basin country into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed. The term refers to a product offered for purchase under a supply contract, but for purposes of calculating the value of the end product includes services (except transportation services) incidental to its supply, provided that the value of those incidental services does not exceed the value of the product itself; and

(ii) Excludes products, other than petroleum and any product derived from petroleum, that are not granted duty-free treatment under the Caribbean Basin Economic Recovery Act (19 U.S.C. 2703(b)). These exclusions presently consist of--

(A) Textiles, apparel articles, footwear, handbags, luggage, flat goods, work gloves, leather wearing apparel, and handloomed, handmade, or folklore articles that are not granted duty-free status in the Harmonized Tariff Schedule of the United States (HTSUS);

(B) Tuna, prepared or preserved in any manner in airtight containers; and

(C) Watches and watch parts (including cases, bracelets, and straps) of whatever type, including, but not limited to, mechanical, quartz digital, or quartz analog, if such watches or watch parts contain any material that is the product of any country to which the HTSUS column 2 rates of duty (HTSUS General Note 3(b)) apply.

(2) Component means an article, material, or supply incorporated directly into an end product.

(3) Designated country means--

(i) A World Trade Organization Government Procurement Agreement (WTO GPA) country (Aruba, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, or the United Kingdom);

(ii) A Free Trade Agreement country (Australia, Canada, Chile, Mexico, Morocco, or Singapore);

(iii) A least developed country (Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, East Timor, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Tanzania, Togo, Tuvalu, Uganda, Vanuatu, Yemen, or Zambia); or

(iv) A Caribbean Basin country (Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Montserrat, Netherlands Antilles, Nicaragua, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, or Trinidad and Tobago).

(4) Designated country end product means a WTO GPA country end product, a Free Trade Agreement country end product, a least developed country end product, or a Caribbean Basin country end product.

(5) End product means those articles, materials, and supplies to be acquired under this contract for public use.

(6) Free Trade Agreement country end product means an article that--

(i) Is wholly the growth, product, or manufacture of a Free Trade Agreement country; or

(ii) In the case of an article that consists in whole or in part of materials from another country or instrumentality, has been substantially transformed in a Free Trade Agreement country into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed. The term refers to a product offered for purchase under a supply contract, but for purposes of calculating the value of the end product includes services (except transportation services) incidental to its supply, provided that the value of those incidental services does not exceed the value of the product itself.

(7) Least developed country end product means an article that--

(i) Is wholly the growth, product, or manufacture of a least developed country; or

(ii) In the case of an article that consists in whole or in part of materials from another country or instrumentality, has been substantially transformed in a least developed country into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed. The term refers to a product offered for purchase under a supply contract, but for purposes of calculating the value of the end product includes services (except transportation services) incidental to its supply, provided that the value of those incidental services does not exceed the value of the product itself.

(8) Nondesignated country end product means any end product that is not a U.S.-made end product or a designated country end product.

(9) Qualifying country means any country set forth in subsection 225.872-1 of the Defense Federal Acquisition Regulation Supplement.

(10) Qualifying country end product means--

(i) An unmanufactured end product mined or produced in a qualifying country; or

(ii) An end product manufactured in a qualifying country if the cost of the following types of components exceeds 50 percent of the cost of all its components:

(A) Components mined, produced, or manufactured in a qualifying country.

(B) Components mined, produced, or manufactured in the United States.

(C) Components of foreign origin of a class or kind for which the Government has determined that sufficient and reasonably available commercial quantities of a satisfactory quality are not mined, produced, or manufactured in the United States.

(11) United States means the United States, its possessions, Puerto Rico, and any other place subject to its jurisdiction, but does not include leased bases or trust territories.

(12) U.S.-made end product means an article that--

(i) Is mined, produced, or manufactured in the United States; or

(ii) Is substantially transformed in the United States into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed.

(b) Unless otherwise specified, this clause applies to all items in the Schedule.

(c) The Contractor shall deliver under this contract only U.S.-made, qualifying country, or designated country end products unless--

(1) In its offer, the Contractor specified delivery of other nondesignated country end products in the Trade Agreements Certificate provision of the solicitation; and

(2)(i) Offers of U.S.-made end products or qualifying, designated, Caribbean Basin, or Free Trade Agreement country end products from responsive, responsible offerors are either not received or are insufficient to fill the Government's requirements; or

(ii) A national interest waiver has been granted.

(d) The contract price does not include duty for end products or components for which the Contractor will claim duty-free entry.

(e) The HTSUS is available on the Internet at http://www.customs.ustreas.gov/impoexpo/impoexpo.htm. The following sections of the HTSUS provide information regarding duty-free status of articles specified in paragraph (a)(2)(ii)(A) of this clause:

(1) General Note 3(c), Products Eligible for Special Tariff Treatment.

(2) General Note 17, Products of Countries Designated as Beneficiary Countries Under the United States--Caribbean Basin Trade Partnership Act of 2000.

(3) Section XXII, Chapter 98, Subchapter II, Articles Exported and Returned, Advanced or Improved Abroad, U.S. Note 7(b).

(4) Section XXII, Chapter 98, Subchapter XX, Goods Eligible for Special Tariff Benefits Under the United States--Caribbean Basin Trade Partnership Act.

(End of clause)

252.226-7001 UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES, AND NATIVE HAWAIIAN SMALL BUSINESS CONCERNS (SEP 2004)

(a) Definitions. As used in this clause--

Indian means--

(1) Any person who is a member of any Indian tribe, band, group, pueblo, or community that is recognized by the Federal Go vernment as eligible for services from the Bureau of Indian Affairs (BIA) in accordance with 25 U.S.C. 1452(c); and

(2) Any ``Native'' as defined in the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.).

Indian organization means the governing body of any Indian tribe or entity established or recognized by the governing body of an Indian tribe for the purposes of 25 U.S.C. chapter 17.

Indian-owned economic enterprise means any Indian-owned (as determined by the Secretary of the Interior) commercial, industrial, or business activity established or organized for the purpose of profit, provided that Indian ownership constitutes not less than 51 percent of the enterprise.

Indian tribe means any Indian tribe, band, group, pueblo, or community, including native villages and native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, that is recognized by the Federal Government as eligible for services from BIA in accordance with 25 U.S.C. 1452(c).

Interested party means a contractor or an actual or prospective offeror whose direct economic interest would be affected by the award of a subcontract or by the failure to award a subcontract.

Native Hawaiian small business concern means an entity that is --

(1) A small business concern as defined in section 3 of the Small Business Act (15 U.S.C. 632) and relevant implementing regulations; and

(2) Owned and controlled by a Native Hawaiian as defined in 25 U.S.C. 4221(9).

(b) The Contractor shall use its best efforts to give Indian organizations, Indian-owned economic enterprises, and Native Hawaiian small business concerns the maximum practicable opportunity to participate in the subcontracts it awards, to the fullest extent consistent with efficient performance of the contract.

(c) The Contracting Officer and the Contractor, acting in good faith, may rely on the representation of an Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern as to its eligibility, unless an interested party challenges its status or the Contracting Officer has independent reason to question that status.

(d) In the event of a challenge to the representation of a subcontractor, the Contracting Officer will refer the matter to--

(1) For matters relating to Indian organizations or Indian-owned economic enterprises: U.S. Department of the Interior, Bureau of Indian Affairs, Attn: Chief, Division of Contracting and Grants Administration, 1849 C Street NW, MS-2626-MIB, Washington, DC 20240-4000. The BIA will determine the eligibility and will notify the Contracting Officer.

(2) For matters relating to Native Hawaiian small business concerns: Department of Hawaiian Home Lands, PO Box 1879, Honolulu, HI 96805. The Department of Hawaiian Home Lands will determine the eligibility and will notify the Contracting Officer.

(e) No incentive payment will be made--

(1) While a challenge is pending; or

(2) If a subcontractor is determined to be an ineligible participant.

(f)(1) The Contractor, on its own behalf or on behalf of a subcontractor at any tier, may request an incentive payment in accordance with this clause.

(2) The incentive amount that may be requested is 5 percent of the estimated cost, target cost, or fixed price included in the subcontract at the time of award to the Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern.

(3) In the case of a subcontract for commercial items, the Contractor may receive an incentive payment only if the subcontracted items are produced or manufactured in whole or in part by an Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern.

(4) The Contractor has the burden of proving the amount claimed and shall assert its request for an incentive payment prior to completion of contract performance.

(5) The Contracting Officer, subject to the terms and conditions of the contract and the availability of funds, will authorize an incentive payment of 5 percent of the estimated cost, target cost, or fixed price included in the subcontract awarded to the Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern.

(6) If the Contractor requests and receives an incentive payment on behalf of a subcontractor, the Contractor is obligated to pay the subcontractor the incentive amount.

(g) The Contractor shall insert the substance of this clause, including this paragraph (g), in all subcontracts exceeding $500,000.
(End of clause)

252.231-7000 SUPPLEMENTAL COST PRINCIPLES (DEC 1991)

When the allowability of costs under this contract is determined in accordance with part 31 of the Federal Acquisition Regulation (FAR), allowability shall also be determined in accordance with part 231 of the Defense FAR Supplement, in effect on the date of this contract.

(End of clause)

252.232-7003 ELECTRONIC SUBMISSION OF PAYMENT REQUESTS (JAN 2004)

(a) Definitions. As used in this clause--

(1) Contract financing payment and invoice payment have the meanings given in section 32.001 of the Federal Acquisition Regulation.

(2) Electronic form means any automated system that transmits information electronically from the initiating system to all affected systems. Facsimile, e-mail, and scanned documents are not acceptable electronic forms for submission of payment requests. However, scanned documents are acceptable when they are part of a submission of a payment request made using one of the electronic forms provided for in paragraph (b) of this clause.

(3) Payment request means any request for contract financing payment or invoice payment submitted by the Contractor under this contract.

(b) Except as provided in paragraph (c) of this clause, the Contractor shall submit payment requests using one of the following electronic forms:

(1) Wide Area WorkFlow-Receipt and Acceptance (WAWF-RA). Information regarding WAWF-RA is available on the Internet at https://wawf.eb.mil.

(2) Web Invoicing System (WInS). Information regarding WInS is available on the Internet at https://ecweb.dfas.mil.

(3) American National Standards Institute (ANSI) X.12 electronic data interchange (EDI) formats.

(i) Information regarding EDI formats is available on the Internet at http://www.X12.org.

(ii) EDI implementation guides are available on the Internet at http://www.dfas.mil/ecedi.

(4) Another electronic form authorized by the Contracting Officer.

(c) If the Contractor is unable to submit a payment request in electronic form, or DoD is unable to receive a payment request in electronic form, the Contractor shall submit the payment request using a method mutually agreed to by the Contractor, the Contracting Officer, the contract administration office, and the payment office.

(d) In addition to the requirements of this clause, the Contractor shall meet the requirements of the appropriate payment clauses in this contract when submitting payments requests.

(End of clause)

252.232-7004 DOD PROGRESS PAYMENT RATES (OCT 2001)

(a) If the contractor is a small business concern, the Progress Payments clause of this contract is modified to change each mention of the progress payment rate and liquidation rate (excepting paragraph (k), Limitations on Undefinitized Contract Actions) to 90 percent.

(c) If the contractor is a small disadvantaged business concern, the Progress Payments clause of this contract is modified to change each mention of the progress payment rate and liquidation rate (excepting paragraph (k), Limitations on Undefinitized Contract Actions) to 95 percent.

(End of clause)

252.243-7001 PRICING OF CONTRACT MODIFICATIONS (DEC 1991)

When costs are a factor in any price adjustment under this contract, the contract cost principles and procedures in FAR part 31 and DFARS part 231, in effect on the date of this contract, apply.

252.243-7002 REQUESTS FOR EQUITABLE ADJUSTMENT (MAR 1998)

(a) The amount of any request for equitable adjustment to contract terms shall accurately reflect the contract adjustment for which the Contractor believes the Government is liable. The request shall include only costs for performing the change, and shall not include any costs that already have been reimbursed or that have been separately claimed. All indirect costs included in the request shall be properly allocable to the change in accordance with applicable acquisition regulations.

(b) In accordance with 10 U.S.C. 2410(a), any request for equitable adjustment to contract terms that exceeds the simplified acquisition threshold shall bear, at the time of submission, the following certificate executed by an individual authorized to certify the request on behalf of the Contractor:

I certify that the request is made in good faith, and that the supporting data are accurate and complete to the best of my knowledge and belief.

(Official's Name)

(Title)

(c) The certification in paragraph (b) of this clause requires full disclosure of all relevant facts, including--

(1) Cost or pricing data if required in accordance with subsection 15.403-4 of the Federal Acquisition Regulation (FAR); and

(2) Information other than cost or pricing data, in accordance with subsection 15.403-3 of the FAR, including actual cost data and data to support any estimated costs, even if cost or pricing data are not required.

(d) The certification requirement in paragraph (b) of this clause does not apply to----

(1) Requests for routine contract payments; for example, requests for payment for accepted supplies and services, routine vouchers under a cost-reimbursement type contract, or progress payment invoices; or

(2) Final adjustment under an incentive provision of the contract.

252.244-7000 SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DOD) (MAR 2000)

In addition to the clauses listed in paragraph (c) of the Subcontracts for Commercial Items and Commercial Components clause of this contract (Federal Acquisition Regulation 52.244-6), the Contractor shall include the terms of the following clauses, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

252.225-7014 Preference for Domestic Specialty Metals, Alternate I (10 U.S.C. 2241 note).

252.247-7023 Transportation of Supplies by Sea (10 U.S.C. 2631).

252.247-7024 Notification of Transportation of Supplies by Sea (10 U.S.C. 2631).

(End of clause)

252.247-7023 Transportation of Supplies by Sea (MAY 2002)

(a) Definitions. As used in this clause --

(1) "Components" means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) "Department of Defense" (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) "Foreign flag vessel" means any vessel that is not a U.S.-flag vessel.

(4) "Ocean transportation" means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) "Subcontractor" means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract.

(6) "Supplies" means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) "Supplies" includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) "U.S.-flag vessel" means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b)(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if--

(i) This contract is a construction contract; or

(ii) The supplies being transported are--

(A) Noncommercial items; or

(B) Commercial items that--

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it contracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that --

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum --

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Maritime Administration, Office of Cargo Preference, U.S. Department of Transportation, 400 Seventh Street SW., Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information:

(1) Prime contract number;

(2) Name of vessel;

(3) Vessel flag of registry;

(4) Date of loading;

(5) Port of loading;

(6) Port of final discharge;

(7) Description of commodity;

(8) Gross weight in pounds and cubic feet if available;

(9) Total ocean freight in U.S. dollars; and

(10) Name of the steamship company.

(f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

(1) No ocean transportation was used in the performance of this contract;

(2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY
TOTAL		

(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there

has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h), in subcontracts that exceed the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(End of clause)

SECTION J

LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

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SECTION J1 DETROIT DAM SPARE TRANSFORMER

SECTION J2 DWORSHAK DAM AND RESERVOIR SPARE TRANSFORMER

SECTION J3 LIBBY DAM SPARE TRANSFORMER

SECTION J4 LITTLE GOOSE DAM AND RESERVOIR SPARE TRANSFORMER

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SECTION J1

LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

DETROIT DAM SPARE TRANSFORMER

TABLE OF CONTENTS

DOCUMENT No.	DESCRIPTION
J1-A	Drawing Index
J1-B	Section C1 (Technical Specifications)
J1-C	Exhibit 1-Project Photos

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ATTACHMENT J1-A

DRAWING INDEX

230 KV Spare Transformer,
Detroit Dam, Santiam River, Oregon

DRAWING NUMBER	SHEET NUMBER	TITLE	REVISION NUMBER	DATE
DEP-5.5-0-0/1	1	Project Location and Vicinity Maps		31 MAR 05
DEP-5.5-0-0/2	2	Index of Drawings		31 MAR 05
DEP-5.5-6-1A40/1	3	Transformer Layout and Limiting Dimensions		31 MAR 05
DEP-5.5-6-9F24/1	4	Transformer Control and Schematic Diagram		31 MAR 05
DEP-5.5-6-9F24/2	5	Transformer Control Cabinet External Connections		31 MAR 05

REFERENCE DRAWINGS

Reference drawings provided show conditions at time of construction. These drawings are furnished for information only and the Government does not warrant that conditions will be exactly as shown. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation.

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV NO.	DATE
		Government		
DE-122-1		Detroit Dam, General Plan	A	1-15-54
DEP-1-6-1E6/3		Powerhouse 15 KV System, Equipment & Main Gen. Leads	2	12 FEB 52
DEP-1-6-1E6/4		Powerhouse 15 KV System, Equipment & Main Gen. Leads	2	12 FEB 52
DEP-2-0-0/1		Powerhouse Arrangement, Plans – EL. 1230 & 1247	1	1-17-52
DEP-2-0-0/8		Powerhouse Arrangement, Trans. Sect. Thru Unit No. 2	1	1-17-52
DEP-2.2-6-1A8/2		Powerhouse Electrical, Installation Details, Sheet 2	1	23 FEB 55
DEP-2.2-6-9A21/2		Powerhouse Electrical, One Line Diagram	1	14 NOV 57

DRAWING INDEX (Cont.)

REFERENCE DRAWINGS

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV NO.	DATE
DEP-2.2-6-9E30/1		Powerhouse Electrical, Structural Wiring Diagram	3	24 JUN 57
DEP-2.2-6-9E56/1		Powerhouse Electrical, Wiring Around Trans. T1 & T2	3	23 FEB 55
FSD-0-3		Foster Reservoir, Plan	2	3 AUG 64
FSD-2-6		Foster Reservoir, D/S Area Plan	3	26 MAR 65
49464F		Outline of 29,000 kVA Transformer	-	8-31-50
53535		Wiring Diagram	C	3-27-51

Attachment J1-B

SECTION C1

DESCRIPTIVE/SPECIFICATIONS/WORK STATEMENT

1.1 DESCRIPTION OF WORK

This section covers the technical specifications for the supply of equipment described in The Schedule, together with all accessories and spare parts specified therein. The work described within these specifications shall include, but not necessarily be limited to the following:

(1) Design, manufacture, and factory test one single-phase generator step-up power transformer for Detroit Dam rated 29,000 kVA, 230 kV GrdY/132.8 kV high-voltage, 13.2 kV low-voltage, Class OFAF cooling, furnish jacks and tools, and furnish spare parts. (SECTION 16277)

(2) Deliver the transformer f.o.b. Foster Dam, offload the transformer, movement of the transformer to the permanent storage location, assemble the transformer as required for long-term storage, oil fill the transformer, perform field tests, provide services of a manufacturer's erecting engineer, and provide training to Government personnel. (SECTION 01600)

(3) Perform work required to comply with site operations and safety and health provisions. (SECTION 01010)

(4) Perform work required to comply with environmental protection. (SECTION 01355)

1.2 SPECIFICATIONS

Technical specifications of Solicitation No. W912DW-05-R-0009, covers the detailed requirements for the equipment and services listed in the Schedule and below.

SECTION	TITLE
01010	CONTRACTOR'S SITE OPERATIONS
01270	MEASUREMENT AND PAYMENT
01306	OPERATIONS AND MAINTENANCE DATA
01330	SUBMITTAL PROCEDURES
01355	ENVIRONMENTAL PROTECTION
01420	SOURCE OF REFERENCED PUBLICATIONS
01600	TRANSFORMER SHIPMENT, HAULING, AND SITE ASSEMBLY
16277	CLASS II POWER TRANSFORMER

1.3 EXISTING CONDITIONS

See Exhibit 1 for views of existing Detroit Dam Project features included as Attachment J1-C.

1.4 DEFINITIONS

(1) Wherever in the specifications, or upon the drawings, the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription" of the Contracting Officer is intended, and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by" or "acceptable to" or "satisfactory to" the Contracting Officer unless otherwise expressly stated.

(2) Where "as shown", "as indicated", "as detailed", or words of like import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provided complete in place", that is, "furnished and installed". (FAR 52.236.21(b) and (c)).

(3) Wherever in these specifications or upon the drawings, the words "Contracting Officer" (CO) or "Contracting Officer's Representative" (COR) are used, it shall be understood to also mean "Government" unless otherwise expressly stated.

(4) Wherever in these specifications the acronym "GQAR" is used, it shall be understood to mean "Government Quality Assurance Representative", unless otherwise expressly stated.

(5) Wherever in these specifications the work "weekend(s)" is used, it shall be understood to mean "Saturday, Sunday, and Federal Holidays", unless otherwise expressly stated.

-- End of Document --

SECTION 01010

CONTRACTOR'S SITE OPERATIONS

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(NOT USED)

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(NOT USED)

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SECTION 01010

CONTRACTOR'S SITE OPERATIONS

PART 1 GENERAL

1.1 GENERAL INFORMATION

This SECTION covers the general requirements applicable to specific Contractor's operations or equipment for work performed on site. The spare 230 kV transformer for Detroit Dam will be delivered to Foster Dam per the requirements of SECTION 01600, "TRANSFORMER SHIPMENT, HAULING, AND SITE ASSEMBLY".

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by basic definition only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

AASHTO	American Association of State Highway Transportation Officials
DOT	Manual on Uniform Traffic Control Devices For Streets and Highways

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330, "SUBMITTAL PROCEDURES":

SD-01 Preconstruction Submittals

1. Employee Identification and Control; G, AO

Method of identification and control of employees entering or leaving site, a minimum of 10 calendar days prior to the start of site work (see paragraph 1.6, "PROJECT SECURITY").

2. Loading Plan; G, AO

A minimum of 30 calendar days prior to on-site work (see paragraph 1.14, "CRANES AND HEAVY EQUIPMENT").

3. Contractor's Work Supervisor(s) Qualifications; G, AO

Qualifications and identification of Contractor's agent(s), a minimum of 10 calendar days prior to the start of site work (see paragraph 1.18.1, "Contractor's Work Supervisor(s)").

4. Scaffolding, Ladder, Stairway or Other Access Schemes; G, AO

A minimum of 30 calendar days prior to their installation and use (see paragraph 1.24, "SCAFFOLDING").

5. Site Work Schedule; G, AO

Site work schedule, a minimum of 10 calendar days prior to the start of site work and updated weekly (see paragraph 1.26, "SITE WORK SCHEDULE").

1.4 WORK AREAS AND ACCESS

1.4.1 Access Roads, General

No new access roads are required. Any Contractor caused damage to existing roadways or Project grounds that are used for access purposes shall be repaired and the surface shall be restored to its pre-damaged condition less normal wear. The Contractor shall comply with all requirements of the State and County authorities for use of existing roadways, such as traffic regulations, load limits, etc. The Contractor shall not block both lanes of the Project roads. If one lane of a roadway used by the Public is blocked, the Contractor shall provide the necessary safety markers, based on the visibility, to control traffic. The Government Quality Assurance Representative (GQAR) shall be notified in advance of any blockage. The Government will make the final determination on whether adequate traffic control measures have been taken.

1.4.2 Access By Government Personnel

Clear access shall be maintained for Government personnel and equipment through all work areas.

1.4.3 Contractor's Staging Area and Employee Access

The Contractor's staging area shall be mutually determined between the Contractor and the GQAR. The job-site office may be in the staging area. The project areas off-limits to Contractor personnel will also be designated. Salespersons or personnel seeking employment will not be permitted inside the powerhouse. Signs may be erected outside the powerhouse containing instructions for personnel seeking the Contractor. The content and location of the signs shall be approved by the GQAR prior to erection.

1.4.4 Government Roadways

The access road to the Foster Dam powerhouse is located approximately 38 miles east of Albany, Oregon, off US-20. The roadways leading to the Foster Dam powerhouse are load limited to HS-20-44 AASHTO loading. Prior coordination with the GQAR is required for any vehicles in excess of this capacity.

1.5 VEHICLES

1.5.1 Use of Private Vehicles

Private vehicles of the Contractor and Contractor's employees shall enter and leave the project powerhouse access road, off US-20. Parking of private vehicles shall be restricted to the areas designated by the Government. Parking spaces for approximately 3 privately owned vehicles will be available in a designated area near the Project Office at the main entrance to the Project.

1.5.2 Identification of Vehicles

All Contractor's vehicles shall display permanent identification of such size and color to allow Government personnel to identify the vehicle.

1.5.3 Access By Government Personnel

Access shall be maintained for Government personnel and equipment through all work areas.

1.6 PROJECT SECURITY

The Foster Dam powerhouse is not open to the public. An Employee Identification and Control Procedure shall be submitted for approval for identification and control of employees entering or leaving the project. The security of the Contractor's property and items furnished under this contract, until items are accepted by the Government, are the Contractor's responsibility whether stored inside or outside the powerhouse.

1.7 PLANT AND EQUIPMENT LIST

A complete list of all plant and equipment, exclusive of shop equipment, to be used on the project shall be furnished at the Contractor/Government Coordination Meeting. The lists shall include rented equipment as well as lease-purchase or sale-leaseback equipment, dates equipment is assigned to or removed from the project, dates deadlined for repairs and returned for use, and adequate identification or description of each item of equipment including manufacturer's name (abbreviated), model number, manufacturer's serial number, year of manufacture, and Contractor's assigned serial or record number.

1.8 SANITATION FACILITIES

The Contractor may use the "Visitor's" restroom facilities, as coordinated with the COR. Failure of the Contractor's personnel to keep Government restrooms neat and orderly will result in denial of continued use. Sanitation facilities furnished by the Contractor shall be in accordance with EM 385-1-1, and shall be located outside the powerhouse at locations

coordinated and approved by the GQAR. The Contractor shall provide freeze protection during the months October through March to prevent any spillage.

1.9 UTILITIES

1.9.1 Government Furnished Utilities

All utilities that are required for use in performance of the work under this contract shall be Contractor-furnished.

1.9.2 Temporary Utility Connections

All utilities provided by the Government shall be at no cost. Care shall be exercised in conserving all Government-furnished utilities. Extension cords shall be Contractor-furnished. All temporary utility connections shall be subject to approval. The location of all power lines and all temporary connections for electricity shall be coordinated with the GQAR. All temporary circuits and devices shall be provided, connected, and maintained and removed prior to final acceptance. Ground fault protection for all circuits used shall be Contractor-furnished.

1.9.3 Telephone

The Contractor shall be responsible for furnishing all telephone service needed by him on the job site. The Project telephone system will not be available to the Contractor. Cellular phones may be used.

1.10 CONTRACTOR'S MISCELLANEOUS STRUCTURES

The building of structures, the erection of tents or other forms of protection, will be permitted only at such places as the Government shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a satisfactory manner. Temporary Contractor facilities provided during Construction shall be removed upon satisfactory completion of the last unit's operational tests. As a minimum the area shall be left looking "broom clean" and at least as clean as before the structure placement.

1.11 SAFE CLEARANCE PROCEDURES

The Foster Dam project personnel use a Safe Clearance System, as stated in ER-385-1-31, to ensure continuity of service and safety to personnel and equipment. Any work performed which requires taking the Project's operating equipment out of service will be done only after a formal clearance is obtained by the GQAR through the Foster Dam Control Room Operators with 48-hour minimum notice. Contractor personnel shall not violate clearance. Any violation of Safe Clearance Procedures will be grounds for removal of the offender(s). Up to five copies of The Foster Dam Safe Clearance Procedure will be supplied to the Contractor upon request.

1.12 DAILY CLEANUP AND DISPOSAL

All debris resulting from the work, such as waste metalwork, packing cases, scrap lumber, oil and grease spills, and other debris shall be collected, removed, and disposed of off-site at least once per week. The Government's trash cans, dump boxes and other containers shall not be used. Liquid waste shall not be disposed of in powerhouse drains. All costs of removing debris

shall be incidental to the work, and no separate payment will be made therefore.

1.13 STORAGE OF EQUIPMENT AND MATERIALS

Storage of equipment and materials will be permitted only in designated staging areas. A minimum access space of three feet shall be maintained between the Contractor's stored items and the existing powerhouse equipment.

1.14 CRANES AND HEAVY EQUIPMENT

1.14.1 Contractor Crane Safety

Contractor's cranes and equipment furnished for this work shall conform with all applicable OSHA requirements and referenced EM 385-1-1 in Section I, clause ACCIDENT PREVENTION including ALT1. Contractor shall submit a lifting diagram addressing such issues as lift, trim, maximum load, maximum wind speed, lifting radius and all other applicable information required by EM 385-1-1 and OSHA as part of the Loading Plan.

1.14.2 Contractor Crane Testing

All Contractor cranes shall be tested in accordance with EM 385-1-1 prior to use on the project and the tests shall be witnessed by the GQAR. Forty-eight hours notice of the test, excluding weekends and federal holidays, shall be given by the Contractor.

1.14.3 Contractor's Cranes and Heavy Equipment

A Loading Plan, which includes the planned method of transportation and operation of Contractor provided cranes and other heavy equipment to be used in the performance of this contract, shall be shall be submitted for government approval and coordinated with the GQAR. This shall include the type, size, loading, and placement of outriggers of all cranes or heavy equipment and the proposed transportation routes and work areas to be used on the project. Operation of heavy equipment adjacent to existing structures shall be avoided when possible.

1.14.4 Movement of Equipment and Materials by the Contractor

The Contractor shall provide all cranes, rigging, lifts, operators, and other necessary means to move equipment or material as required to pursue and complete the work whether owned by the Government or by the Contractor unless otherwise specifically mentioned. This includes but is not limited to the unloading and loading of equipment and material.

1.14.5 Use of Government Cranes

Government cranes will not be available for the Contractor's use.

1.15 DAMAGED EQUIPMENT OR ABNORMAL CONDITIONS

The GQAR shall be informed immediately upon finding any damaged equipment or other abnormal conditions involving additional work in which the Contractor believes he has no responsibility. The failure or abnormality shall not be disturbed until witnessed. Any damage or abnormal conditions not reported

as specified above but discovered at a later date, shall be corrected at the Contractor's expense.

1.16 PROTECTION OF MATERIAL AND WORK

Materials, supplies, tools, equipment and Government property (including all tools, equipment, and special devices supplied by the Contractor and to be turned over to the Government at the end of the Contract) shall be protected and preserved in accordance with manufacturer's recommendations. If material, equipment, supplies, and work performed are not adequately protected, such property may be protected by the Government and the cost thereof will be charged to the Contractor or deducted from any payment due.

1.17 DRAWINGS AND MANUALS

Any additional existing drawings and manuals required for the work that are not included herein will be available for viewing at the Detroit Project Administration Building, during normal project day shift working hours, from 6:30 am to 5:00 PM, Monday through Thursday. Drawings and manuals shall not be removed from the office. However two copies of available technical data and drawings not included in the reference drawings will be made at no cost to the Contractor within five calendar days, after the request for such copies has been made.

1.18 CONTRACTOR'S WORK SUPERVISOR AND PERSONNEL

1.18.1 Contractor's Work Supervisor(s)

At least one full-time employee of the Contractor shall be available at the worksite anytime other Contractor or subcontractor personnel are working on the site to supervise and direct the work specified herein. Supervisor(s) shall be present at the site during transformer assembly and installation, and shall be responsible for providing complete and correct direction of all installation work. The supervisor(s) shall be responsible for following the Government's Safe Clearance Procedure, paragraph 1.11. The supervisor(s) shall keep all as-built drawings current and provide copies upon completion of the work. The supervisor(s) shall be fluent in the spoken and written English language. The supervisor(s) shall have been engaged in similar generator step-up power transformer installation field work, as is specified herein, for a minimum of three years, and shall have performed this work at a minimum of two different facilities. The Contractor's Work Supervisor(s) Qualifications, experience, a verifying contact, name and phone number, shall be submitted for at least two such facilities.

1.18.2 Contractor's General Personnel

(1) General. The Contractor shall prepare and revise whenever organizational changes occur, a project organization chart reflecting at least those positions described herein and defining their work relationships, etc. The Contractor shall maintain a complete organizational chart of all positions that will be working on the project. All personnel employed by the Contractor shall be fully qualified in their respective fields to render the services necessary. The Contractor's organizational plan shall be maintained in the CQC Plan and submitted upon request by the GQAR.

(2) Identification of Contractor's Employees. The Contractor shall be responsible for furnishing to each employee at the powerhouse, and for requiring each employee at the powerhouse, to display such identification as approved and specified below. All Contractor personnel, prior to engaging in work on project premises, shall either be issued an identification card by the Contractors or agree to provide their driver's license as I.D. upon request. If the Contractor so decides to furnish I.D. cards to all employees, the card must include the following information:

Name of Contractor
Name of Employee
Birth date
Weight
Hair color
Eye color
Recent photo

All prescribed identifications shall be returned immediately to the Contractor upon release of any employee. The Contractor shall include a list of all Contractor employees, which includes their titles and who will be working on the project. This listing shall be revised and resubmitted when personnel changes occur. When required by the Government, the Contractor shall obtain and submit fingerprints of all persons employed to work at the Foster Dam Project.

1.19 PROTECTION AND RESTORATION OF EXISTING FACILITIES

Existing facilities shall be protected whether or not shown on the drawings. Upon completion of the work, existing facilities, not included as a portion of the work, shall be left in a condition equal to the original condition prior to the contract. Costs for repair and restoration of any facilities shall be considered to be incidental to and included in the contract price.

1.20 CARE OF DRAINS

Existing powerhouse floor drains including the unwatering drains and transformer cell drains shall not be used for disposal of any solid material and or any liquids other than clear water. The Contractor shall clean Contractor-obstructed drains. Costs incurred in the cleaning and clearing of plugged drains, shall be borne by the Contractor. Care of the drains shall be included in the Spill Prevention Plan, SECTION 01355.

1.21 WORK BY THE GOVERNMENT CONCURRENT WITH CONTRACTOR WORK

The Government will limit interference with the Contractor's work to the maximum reasonable extent and the Government and Contractor shall coordinate as necessary.

1.22 NOISE CONTROL

Noise control and noise levels shall conform to requirements set forth in the appropriate regulations, including EM 385-1-1, Section 05.C, 29 CFR 1910.95, 29 CFR 1926.52 and .101. The most conservative requirement shall govern.

1.23 BARRICADES AND DANGER, DETOUR AND WARNING SIGNS

1.23.1 Barricades, and Danger and Detour Signs

The Contractor shall provide, erect, and maintain barricades, red lights, danger signals, and detour and other signs; provide watchmen; and take precautions for the protection of the work and the safety of the public. Powerhouse galleries, floors, Project roads, etc. obstructed or closed to traffic shall be protected by barricades. Obstructions shall be continuously illuminated day and night. Lanterns or flares shall illuminate warning signs day and night. The signs, signals and barricades shall comply with EM 385-1-1 SECTION 08, 29 CFR 1910.145 and 29 CFR 1926 SUBPART G.

1.23.2 Warning Signs

Warning signs shall be erected 500 feet in advance of any place on the project where operations interfere with the use of a road by traffic. Warning signs shall conform to the standards established in Part IV of the DOT "Manual on Uniform Traffic Control Devices for Streets and Highways".

1.24 SCAFFOLDING

Scaffolding, ladder, stairway, or other access schemes proposed for use shall be submitted for approval, including type, layout, and connections. Approved anti-slip surface material shall be installed on scaffolding platforms. Scaffolding shall comply with EM 385-1-1.

1.25 SITE WORKING HOURS

1.25.1 Government Project Personnel Working Hours

The scheduled working hours of the Project staff are Mondays through Thursdays from 6:30 a.m. until 5:00 p.m. Fridays, Saturdays and Sundays are non-work days. Crews and staff do not work on Federal Holidays. All Project support required by the Contractor shall be scheduled during the Project staff working hours.

1.25.2 Contractor's Working Hours

The Contractor's desired working hours are between 6:30 a.m. and 5:00 p.m., Monday through Thursday. The schedule of work hours, shifts and days of the week shall be coordinated with the GQAR. Notification of any proposed changes of the schedule of regular work hours, overtime work hours, and shifts of work crews and personnel at the site shall be coordinated with the GQAR.

1.26 SITE WORK SCHEDULE

A Site Work Schedule shall be submitted and shall include major and minor work elements and stages of the work. These documents shall be updated and submitted to reflect the actual work elements and progress and changes to the schedule that are anticipated in the future.

1.27 SITE INVESTIGATIONS AND CONDITIONS AFFECTING THE WORK

The Contractor shall take steps reasonably necessary to ascertain the nature and location of the work. The general and local conditions shall be investigated which can affect the work or its cost, including but not limited to the following. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expenses to the Government. The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless the understanding or representation is expressly stated in this contract.

(1) Conditions bearing upon transportation, disposal, handling, and storage of materials.

(2) The availability of labor, water, electrical power, and roads.

(3) Uncertainties of weather, river stages, or similar physical conditions at the site.

(4) The conformation and conditions of the ground and equipment and facilities to be replaced and/or rehabilitated.

(5) The character of equipment and facilities needed preliminary to and during work performance.

(6) The amount of work space, accessibility, lighting, etc.

1.28 PERMITS AND RESPONSIBILITIES

The Contractor shall, without additional expense to the Government, be responsible for obtaining necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and property of others. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for completed unit of work that may have been accepted under the contract.

1.29 QUALITY CONTROL AT THE JOB SITE

The Contractor's quality control system shall encompass actions involving selection of construction material sources and suppliers, on-site and off-site fabrication of Contractor-furnished items to be included in the work, on-site and off-site production of construction materials, work placement procedures, workmanship, inspection, and testing. The system shall provide supervision, inspection, and tests of all items of work, including that of its suppliers and subcontractors, that will assure the compliance of all work with applicable specifications and drawings in respect to the

Contractor furnished equipment, materials, workmanship, construction, finish, functional performance, and identification. The Contractor's system shall encompass all management and supervisory actions taken by its staff that affect quality of the finished construction work, including all inspection controls and tests required for compliance with the contract, except for those inspections and tests specifically reserved to be accomplished by the Government.

-- End of Section --

SECTION 01270

MEASUREMENT AND PAYMENT

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(NOT USED)

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL INFORMATION

In each instance the contract price for an item will constitute full compensation as herein specified, as shown, or as otherwise approved. The contract price and payment will also constitute full compensation for all work incidental to completion of the item, unless such work is otherwise specifically mentioned for separate payment under another bid item. In the event any work is required by the specification sections or by the drawings and not specifically mentioned in the measurement and payment paragraphs, separate or direct payment will not be made and all costs thereof are incidental to and included in the contract prices and payments for all items listed in the bid schedule.

1.2 MEASUREMENT

Items measured as a Lump Sum (LS) will be measured for payment as a completed job, in place, in the locations indicated. This measurement includes all incidental work and materials that are necessary to make a complete job. Unless the payment paragraph makes a specific exception of an item, incidental items will not be measured under another item.

1.3 PAYMENT

1.3.1 General

Payment for all work specified, shown, or incidental to complete the work will be made as follows:

(1) Line Item No. 1001; Design one 29,000 kVA, 230 kV, Class OFAF, 1-phase spare power transformer.

Payment shall be full compensation for performing all work to design the transformer, complete, as specified and as approved. This design is considered a single event, and no design costs shall be loaded into the manufacturing costs.

(2) Line Item No. 1002; Manufacture, factory test, and deliver one 29,000 kVA, 230 kV, Class OFAF, 1-phase spare power transformer and accessories complete to railhead in Foster, Oregon, and provide services of Erecting Engineer.

Payment shall be full compensation for the labor, materials, equipment and transportation required to manufacture, test, and deliver the transformer and accessories by rail to Foster, Oregon, including O&M manuals and all erecting engineer services.

(3) Line Item No. 1003; Perform delivery inspection, and truck transport transformer and accessories from railhead in Foster, Oregon, to Foster Dam.

Payment shall be full compensation for the labor, materials and equipment required to perform an inspection of the transformer on the railcar, off-load the transformer and accessories from the railcar onto a transport truck, and transport the transformer and accessories to Foster Dam.

(4) Line Item No. 1004; Offload transformer and accessories at Foster Dam, perform inspection and tests, move transformer to permanent storage location, and assemble the transformer.

Payment shall be full compensation for the labor, materials and equipment required to perform the inspections and tests on the transformer prior to off-loading from the transport truck at Foster Dam, movement of the transformer and accessories to the permanent storage location, placement of the transformer onto the concrete mounting pad, and complete assembly of the transformer.

(5) Line Item No. 1005; Furnish transformer oil, oil-fill transformer, and perform field tests.

Payment shall be full compensation for the labor, materials and equipment required to deliver the new transformer oil, hot oil fill the transformer under vacuum, and perform all required field tests.

(6) Line Item No. 1006; Furnish jacks, and tools.

Furnishing jacks and special tools necessary to move and guide the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the required equipment and tools, complete, as specified and as approved.

(7) Line Item No. 1007; Furnish spare parts.

Furnishing spare parts for the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the spare parts for the transformer, complete, as specified in Section 16277 paragraph 2.17, and as approved.

(8) Line Item No. 1008; Contractor furnished training.

Contractor furnished training will be measured for payment as a complete pay item (Lump Sum). Payment shall be full compensation for performing training of Government personnel, complete, as specified in Section 01600 paragraph 3.12, and as approved.

PART 2 PRODUCTS & PART 3 EXECUTION

(NOT USED)

-- End of Section --

SECTION 01306

OPERATIONS AND MAINTENANCE DATA

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SECTION 01306

OPERATIONS AND MAINTENANCE DATA

PART 1 GENERAL

1.1 GENERAL INFORMATION

Parts catalogs and operating instructions needed or useful in operation, maintenance, repairs, dismantling, or assembling, and for repair and identification of parts for ordering replacements, shall be especially prepared. The parts catalogs and operating instructions shall cover all equipment furnished under this contract and shall be assembled under a suitable common cover. The assembled material shall include complete identification of the spare parts furnished in compliance with the requirements of these specifications.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”:

SD-10 Operation and Maintenance Data

1. Initial Submittal of Operations and Maintenance Data; G,

An initial submittal of three complete draft copies of the Operations and Maintenance Data shall be made not less than 45 days prior to delivery of the equipment. The COR will return one draft copy with appropriate approval of, or comment on, the acceptability of the submittal. The Contractor shall resubmit the one draft copy with such corrected and/or additional data sheets and drawings as may be directed by the COR. One copy of each revised data sheet and drawings shall be furnished also for each of the two draft copies retained by the COR.

2. Final Submittal of Operations and Maintenance Data; G,

Upon "Final" approval of the draft copies of the Operations and Maintenance Data, the Contractor shall submit three additional copies for a total of six to the COR. All copies shall be furnished no later than the date specified for delivery of the equipment.

PART 2 PRODUCTS

2.1 BINDER REQUIREMENTS

Data for equipment shall be assembled in a binder for 8 ½ by 11 inch sheets with slide binding or screwpost fastening for replacement. Loose-leaf binders are not acceptable. A title on the cover shall show the information stated in paragraph 3.2 (1)-(7).

PART 3 EXECUTION

3.1 SPECIFIC REQUIREMENTS

Shop assembly or special drawings shall be of a size that requires folding only in left to right coordinate, and shall be 11" x 17" in size unless the original drawing is 8-1/2" x 11" in size, in which case provision of an 8-1/2" x 11" drawing will be permitted. A permanent reproducible shall be furnished for all drawings. This reproducible shall be in addition to the five copies specified. Each sheet shall be numbered and a revised index for the existing manual shall be provided. One copy of such manual shall contain all original versions of standard catalog cuts, manufacturer's data, parts sheets, and illustrations. All other copies shall be readable and non-permanent or non-water-resistant copies are not acceptable. All nonapplicable data such as description of other models, optional equipment not included, etc. shall be marked out. If reference is made to other drawings or data they shall be included. The O&M data shall list equipment covered; the manufacturer; and name, address, and telephone number of the local representative.

3.2 FORMAT

Binders shall be side-binding, telescoping-post, expandable-back, and shall have a supported vinyl cover with a stiff binder board for 8 1/2- by 11-inch sheets. Ring-type loose leaf binders will not be acceptable. One source of acceptable binders is as follows:

Arts & Crafts Book Manufacturing
E 618 Second Avenue
Spokane, Washington 99202
Telephone: (509) 747-3818

One copy of each of the drawings approved under this contract shall be furnished, and shall be folded and bound as required for easy unfolding without removal from the binder. Each sheet in the binder shall be numbered and an index provided for ready reference to the data. All standard catalog cuts, manufacturer's printed data or descriptive literature, parts sheets, illustrations, etc., shall be either original manufacturer sheets or reproduced copies of equal clarity and durability. The following identification shall be inscribed on both the spines and covers:

(1) The words "OPERATIONS AND MAINTENANCE MANUAL."

(2) The name and location of the building, facility, and/or project.

(3) The volume number and total number of volumes.

(4) The systems and/or equipment therein.

(5) The name of the Contractor.

(6) The contract number.

(7) The year of completion of the contract.

3.3 CONTENT

The O&M manuals shall be structured to address each of the following topics in order for each system. When the topic does not apply to a particular system the topic name will be included in the manual with the words "DOES NOT APPLY."

3.3.1 Warning Page

A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

3.3.2 Index

Each manual shall have a master index at the front identifying all manuals and volumes and subject matter by system name for each. Following the master index, each manual shall have an index of its enclosures listing each volume, tab numbers, etc., as necessary to readily refer to a particular operating or maintenance instruction. Rigid tabbed fly leaf sheets shall be provided for each separate product and/or piece of equipment under each system in the manual. When a manual is divided into volumes, each volume shall have a master index at its front, followed by an index for the specific volume listing in detail all enclosed instructions for materials, individual pieces of equipment, and systems. All pages shall be numbered with the referenced number included in the index.

3.3.3 Description

Narrative and technical descriptions of the system and of the interrelations with other systems shall be provided.

3.3.4 Catalog Data Sheets

All catalog data sheets shall be inserted in an appendix at the end of the manual following the preventative maintenance (PM) charts appendix. This appendix shall be for catalog data sheets only. An index of the catalog data sheets shall be provided to provide clear and concise reference to shop drawings and individual pages within the manual. Standard catalog data sheets will not be acceptable unless irrelevant parts are marked out (with black "X") and relevant parts clearly identified. Any data on catalog sheets which does not directly relate to purchased equipment shall be marked out. Parts shall be so identified that they can be readily ordered from local area industrial supply outlets if not of special manufacture. A cross-reference between items described in catalogs, instructions, and drawings shall be provided to facilitate ease of location of parts described. Highlighting and "scribble notes" will not be acceptable for identification purposes. Catalog data sheets shall be inserted into the manual such that positive identification of all parts on catalog data sheets are clearly identified by:

(1) Part Name. A clear and descriptive name shall be given to each component in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and telephone number of the manufacturer shall be given along with the catalog part number.

(3) Material Safety Data Sheet (MSDS). A copy of the MSDS for the transformer oil shall be included with the catalog data sheets.

3.3.5 Spare Parts Listing

The spare parts listing shall be inserted in an appendix at the end of the manual following the catalog data sheets. This appendix shall be for spare parts listing only. The spare parts listing shall clearly state the spare parts supplied and a list of recommended spare parts to be stocked. The spare parts listing shall clearly identify:

(1) Part Name. A clear and descriptive name shall be given to each component listed as a spare part in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and Telephone number of the manufacturer shall be given along with the catalog part number.

(3) Quantity. The quantity of each part listed as a spare part shall be given.

(4) Reference to Catalog Data Sheets. Each spare part shall be referenced to the corresponding catalog data sheet by page number.

(5) Price.

3.3.6 Operation Data

The operation data shall include specific operating instructions, functional description of operating parts, and special precautions or procedures to be considered. The Contractor shall be responsible for the necessary coordination between his subcontractors, suppliers, and manufacturers to assure complete submittals on individual interrelated equipment components. The data shall include the following:

(1) Check List Prior to Start Up. Precautions and prechecks prior to start up of equipment and/or system, including safety devices, monitoring devices and control sequence shall be provided.

(2) Start Up and Operation. Step-by-step sequential procedures For start up and normal operation checks for satisfactory operation shall be provided. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the operating instructions and flagged for the attention of the operator. Procedures shall include test, manual or normal, and automatic modes.

(3) Shutdown. Procedures for normal and emergency shutdown of equipment and/or systems shall be provided. The instructions shall include any procedures necessary for placing the equipment and/or system on standby or preparing the equipment and/or system for start up

at a later time. Procedures shall include test, manual or normal, and automatic modes.

(4) Normal Operating Conditions. A tabular listing of the Normal operating conditions of each individual component, including the settings, operating temperature, valve conditions, etc.

3.3.7 Maintenance Procedures

Recommended procedures shall indicate preventive maintenance, lubrication, and good housekeeping practices which should be performed by operating personnel as well as more complex maintenance procedures which would normally be performed by trained maintenance personnel only, including instructions for oil filling and drying the oil-filled transformer. The procedures shall be presented with a schedule indicating time frames or operating hours for specific maintenance to be accomplished. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the maintenance procedures and flagged for the attention of personnel. The procedures shall include necessary operating instructions for taking equipment off line, putting equipment on line, or putting equipment on standby. The instructions shall include all necessary material, equipment, and system data to perform maintenance work and shall include, but not be limited to, manufacturers bulletins, catalogs, and descriptive data; certified performance curves, copies of approved test plans, including logs and records of performance acceptance test results, and actual adjustments made during final acceptance and inspection; system layouts, including block diagrams, wiring, control, and isometric diagrams; schematic items within the facility; interrelationships with other items of system; and a list of special tools required.

3.3.8 Repairs

Repair procedures shall be presented with a step-by-step procedure for locating and correcting the trouble. A "shop manual" may be used for this purpose. The procedures shall clearly indicate a major repair activity which should only be performed in a shop or factory versus normal repair work that may be performed onsite or with equipment online. The procedures shall also clearly indicate the limit of repair work that may be performed by Government personnel during the warranty period without voiding warranty provisions. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the repair procedures and flagged for the attention of personnel. Repair procedures shall be keyed to a troubleshooting guide outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.9 Operator Preventive Maintenance, Major Maintenance, and Adjustments

The instructions shall include recommended operator preventive maintenance which would normally be performed by operating personnel and adjustment procedures necessary for normal operation. Schedules shall be provided indicating time frames or operating hours for initiating operator maintenance and adjustments, and including manufacturer's recommended major maintenance requirements. Emergency adjustments shall be included and flagged for operator's attention; the instructions shall also include procedures for emergency repairs that could be performed by operating personnel. These emergency repairs or "trouble-shooting guides" shall be outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.10 Maintenance Schedule

A separate schedule of all required periodic maintenance shall be included. This schedule shall list by frequency of occurrence all lubricants and special adjustments required. The types and amounts of lubrication must be specified. The Contractor shall verify that the furnished maintenance schedule agrees with the published manufacturer's data.

3.4 ELECTRONIC COPY

One copy of the complete O&M manual shall be furnished in electronic format on a CD ROM. The use of the Adobe Acrobat portable document format (PDF) is acceptable.

3.5 PAYMENT

No separate payment will be made for the preparation and submittal of O&M manuals. Costs incurred by the Contractor in the preparation and submittal of O&M manuals shall be considered as incidental and included in the contract price. Approval and acceptance of the final O&M manuals shall be accomplished before final payment is made to the Contractor.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

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1.3 APPROVED SUBMITTALS
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1.5 WITHHOLDING OF PAYMENT
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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-09 Manufacturer's Field Reports

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. A “shop drawing” is a Contractor’s or manufacturer’s drawing which provides detail for the manufacturing, delivery, site movement, and assembly of the equipment provided.

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings", as defined, above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error

which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 GENERAL SUBMITTAL REQUIREMENTS

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register, ENG Form 4288, indicating items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project. The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 "Shop Drawings" Procedures

The procedure for "shop drawings" shall be as follows:

(1) "Shop Drawings" Approved by Contractor. All "shop drawings" submittals shall be reviewed and corrected to make them complete and in accordance with the contract. Approval shall be indicated on each drawing by an "Approved" stamp as shown in paragraph 1.14. Names and titles of individuals authorized by the Contractor to approve drawings shall be provided prior to any submission. All shop drawings shall be submitted as indicated herein. Submittals which are not required to be approved by the Government ("information only") will be monitored and spot-checks will be made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for Government approvals.

(2) "Shop Drawings" Approved by the Government. Before submission the Contractor shall review and approve all "shop drawings" prepared by subcontractors, suppliers, and the Contractor for completeness and compliance with plans and specifications, and shall so certify by stamp on each drawing or item of printed material. (Red markings are reserved for the Government.) Suppliers or subcontractors certifications are not acceptable as meeting this requirement. Submittals will be reviewed and processed as follows: NOTE: The following action codes are to further define only the referenced codes on the reverse side of ENG Form 4025.

a. Action Code A (Approved as Submitted). Shop drawings which can be approved without correction will be stamped "Approved" and one reproducible, or two copies of catalog and other printed data, will be returned to the Contractor.

b. Action Code B (Approved, Except as Noted, Resubmission Not Required). Shop drawings which have only minor discrepancies will be corrected and stamped "Approved as Corrected", or "Except as Noted." Corrections will be identified. Distribution will be same as for "Approved" drawings.

c. Action Code C (Approved, Except as Noted, Resubmission Required). Two prints of shop drawings which are incomplete or require more than minor corrections will be marked in red to indicate necessary corrections. One marked copy will be returned to the Contractor stamped "Returned for Correction." Transparencies of such drawings will be destroyed.

d. Action Code E (Disapproved). One print of shop drawings which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections will be returned to the Contractor stamped "Disapproved." An explanation will be furnished on the print or on ENG Form 4025 indicating reason for disapproval. Transparencies of such drawings will be destroyed.

e. Resubmittal. Resubmittal will not be required for drawings with Action Code A or B unless subsequent changes are made by the Contractor or by a contract modification. For drawings with Action Code C or E, corrections required shall be made, any changes shall be noted by dating the revisions to correspond with the change request date, and the drawings shall be promptly resubmitted for review. Government costs incurred after the first resubmittal will be charged to the Contractor.

1.10.2 "Shop Drawings" Submittal

1.10.2.1 General

ENG Form 4025 shall be in three (3) copies used for transmitting "shop drawings" submittals. Each submittal requiring Government approval, five copies; and for information only, three copies, shall be listed separately naming subcontractor, supplier, or manufacturer, specification paragraph number(s), drawing/sheet number(s), pay item number, and any other information needed to identify the item, define its use, and locate it in the work. Each submittal shall be complete containing all information needed to determine contract compliance.

1.10.2.2 Drawings

Each drawing shall be not more than 28 inches high by 40 inches wide, with a title block in lower right hand corner and a 3 by 4 inch clear area adjacent. Title block shall contain subcontractor's or fabricator's name, contract number, description of item(s), bid item number, and a revision block. Unless otherwise specified, two prints of any type, except blueprints, and one electronic drawing file in an approved Computer Aided Design/Drafting (CADD) format discussed in paragraph 1.10.2.3 below shall be submitted. A blank margin of 3/4 inch at bottom, 2 inches at left, and 1/2 inch at top and right shall be provided. Separate drawings are required for each bid item. Computed weight shall be indicated for all items for which payment is based on weight. Where drawings are submitted for assemblies of more than one piece of equipment or systems of components dependent on each other for compatible characteristics, complete information shall be submitted on all such related components at the same time. The information

shall be complete and the sequence of drawing submittal shall be such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, shall consist of complete assembly and detail drawings. All revisions after initial submittal shall be shown by number, date, and subject in revision block. Any drawing or electronic drawing file submitted that is not of satisfactory quality will be returned without action.

1.10.2.3 Final Approved Version of Electrical and Mechanical Shop Drawing

Upon completion of the work under this contract, the Contractor shall submit for review and approval by the Contracting Officer, hard copies (black and white prints) of the final approved versions of the drawings. The drawings shall show all changes and revisions, including any field changes, made up to the time that the work is completed and accepted. The Contractor shall also prepare an index drawing for all Contractor prepared drawings. The index drawing shall include the sheet number, file number, drawing title, and the CADD file name for each drawing. After approval of these drawings, the Contractor shall furnish a complete set of electronic files in Bentley (Intergraph) MicrosStation compatible with Version 8, for all drawings produced by the Contractor in performance of this contract. Electronic files shall be .dgn format with element types that can be edited (i.e. no attached raster files, .dxf, or .dwg file formats will be accepted). Each drawing sheet shall be a separate CADD file. The files shall be submitted on CD ROM's. In addition, the Contractor shall furnish one paper copy of each drawing that is on the CD ROM's. The paper drawings and the files on the CD ROM's shall be identical. All paper drawings submitted to the Contracting Officer shall be no larger than 28 by 40 inches in size.

1.10.3 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.10.4 Other Submittals

All requirements for "shop drawings" under paragraphs 1.10.2.1 and 1.10.2.2 shall apply to catalog cuts, illustrations, printed specifications, or other data submitted except that five copies for Government approval and three copies for information only shall be submitted. Submittals shall be made on 8 1/2- by 11-inch paper or when appropriate as a drawing not larger than 28 inches high by 40 inches wide. Inapplicable portions shall be marked out and applicable items such as model numbers, sizes, and accessories shall be indicated. Decisions on these other submittals will be given in accordance with paragraph Government Approved Submittals.

1.11 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

1.13 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.14 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR
(Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

-- End of Section --

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Detroit Dam 230 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 01010																										
SD-01		1	1.14	Loading Plan				x								x	AO									
SD-01		2	1.18.1	Contractor's Work Supervisor Qualifications					x							x	AO									
SD-01		3	1.24	Access Schemes				x								x	AO									
SD-01		4	1.26	Site Work Schedule				x								x	AO									
SECTION - 01306																										
SD-10		1	1.2	Initial Submittal of O&M Data										x		x	HDC									
SD-10		2	1.2	Final Submittal of O&M Data										x		x	HDC									
SECTION - 01355																										
SD-01		1	1.10.1	Environmental Protection Plan				x								x	AO									
SECTION - 01600																										
SD-01		1	3.3	Transformer Movement Plan				x								x	AO									
SD-01		2	3.5.1	Site Del Inspection Procedure and Schedule			x									x	AO									
SD-01		3	3.8.2	Transformer Site Assembly Procedure			x									x	HDC									
SD-06		1	3.8.3	Transformer Oil Field Test Report						x						x	AO									
SD-06		2	3.10	Tran Field Test Report						x						x	AO									
SD-08		1	3.12	Training Outline				x								x	AO									
SD-09		1	3.5.1	Impact Recorder Summary Report						x						x	AO									
SD-09		2	3.11	Erecting Engineer's Record									x			x	AO									
SD-09		3	3.5.3	Site Delivery Inspection Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Detroit Dam 230 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 16277																										
SD-02		1	1.4	Outline, Assembly, and Detail Drawings		x										x	HDC									
SD-02		2	1.4	Installation Drawings (as required)		x										x	HDC									
SD-05		1	1.4	Descriptive Data	x											x	HDC									
SD-05		2	2.1.5.1	Siesmic Anchorage Design Calculations	x											x	HDC									
SD-06		1	3.2	Transformer Factory Acceptance Test Report						x						x	HDC									
SD-06		2	3.2.3.1	Bushing Design Test Reports						x						x	HDC									
SD-06		3	3.2.3.3	Bushing Routine Test Reports						x						x	HDC									
SD-06		4	3.2.3.4	Bushing Current Transformer Test Reports						x						x	HDC									
SD-06		5	3.2.4	Surge Arrester Design Test Reports						x						x	HDC									
SD-06		6	3.2.4	Surge Arrester Conformance Test Reports						x						x	HDC									
SD-07		1	2.1.5	Transformer Siesmic Capability Certification							x					x	HDC									
SD-07		2	2.14.1	Transformer Oil Certification							x					x	HDC									
SD-07		3	3.2	Factory Test Dates Notification				x								x	HDC									
SD-08		4	3.2	Factory Test Procedures			x									x	HDC									
SECTION - D																										
SD-07		1	1.2 (2)	Expected Delivery Date Notification				x								x	AO									
SD-07		2	1.2 (5)	Shipping Notices	x											x	AO									
SECTION - E																										
SD-01		1	1.3.2	Quality Control Plan				x								x	HDC									
SD-09		2	1.8	Material Inspection and Receiving Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Detroit Dam 230 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - F																										
SD-07		1	1.6	Project Schedule				x								x	AO									
SECTION - H																										
SD-07		1	1.9	Bill of Materials	x											x	AO									
SD-07		2	1.1	Erecting Engineer's Qualifications					x							x	HDC									

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SECTION 01355

ENVIRONMENTAL PROTECTION

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SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 GENERAL INFORMATION

This section covers preventing environmental pollution and minimizing environmental degradation during, and as a result of, transformer delivery, site movement, assembly and oil filling operations at Foster Dam. Other requirements in the sections may also contain specific requirements for environmental protection. Those specific requirements are in addition to or modify the requirements in this section. The control of environmental pollution requires consideration of sound levels, air and water.

1.2 PUBLICATIONS

1.2.1 APPLICABLE REGULATIONS

All environmental pollution shall be prevented, abated, and controlled and environmental degradation arising from site work activities shall be minimized by complying with all applicable Federal, State, and local laws and regulations, as well as specific requirements of this contract. Where conflicting or duplicate regulations apply, the most stringent requirement shall govern. The Contractor shall comply with the following list of environmental regulations where applicable. This list is not inclusive of all environmental requirements, but represents the Federal regulations most likely to apply to work under this contract.

a. Clean Air Act - 40 CFR 61: Emission Standards for Hazardous Air Pollutants

b. Solid Waste Disposal Act - 40 CFR 241: Land Disposal - 40 CFR 245: Resource Recovery

c. Resource Conservation and Recovery Act - 40 CFR 260-272 : Hazardous Waste Management

c. Comprehensive Environmental Response , Compensation and Liability Act - 40 CFR 300-302: National Oil and Hazardous Substances Contingency Plan for hazardous substance spills and cleanup

d. Clean Water Act - 40 CFR 110-117, 122: Point source discharges into U.S. waters

e. Executive Order 12856 - Federal Compliance Order with the Emergency Planning and Community Right-to-Know Act and the Pollution Prevention Act

f. 49 CFR 100-177, Hazardous materials transportation regulation

1.2.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.62	Safety and Health Regulations for Construction: Lead
33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171-178	Hazardous Materials Regulations

1.3 SUBMITTALS

The following shall be submitted as stated in accordance with SECTION 01330, "SUBMITTAL PROCEDURES":

Environmental Protection Plan including proposals for implementing this section for environmental protection with 180 days after Notice to Proceed (NTP) and prior to commencing site work. Included in the

Environmental Protection Plan shall be the Spill Control Plan and Contaminant Prevention Plan. If satisfactory, the plan will be approved and one copy will be returned. If unsatisfactory, the plan will be returned for resubmission (see paragraph 1.10, "ENVIRONMENTAL PROTECTION PLAN").

1.4 DEFINITIONS

1.4.1 Environmental Pollution And Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.4.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.4.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents and waste solvents.

1.5 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of site work. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.6 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.7 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all

fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.8 NONCOMPLIANCE

An order may be issued stopping all or part of the work for failure to comply with the provisions of this section until corrective action has been taken. No time lost due to such stop orders shall be the subject of a claim for extension of time or for costs or damages unless it is later determined that the Contractor was in compliance.

1.9 ENVIRONMENTAL LITIGATION

1.9.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts of omissions of the Contractor or a subcontractor at any tier not required by the terms of this Contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this Contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this Contract under the terms of SECTION I Clause SUSPENSION OF WORK. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) as provided in this clause, subject to the provisions thereof.

1.9.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

1.10 ENVIRONMENTAL PROTECTION PLAN

1.10.1 General

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during sit work. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan

including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.10.2 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During site work, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.10.3 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

(1) Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.

(2) Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

(3) Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

(4) Description of the Contractor's environmental protection personnel training program.

(5) A Spill Control plan shall be provided, and shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

(c) Training requirements for Contractor's personnel and methods of accomplishing the training.

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified. Number required and availability must consider the logistics and time required to begin containment and

cleanup of a spill, accessibility, number of remote work areas, number and location of floating plants on the river, etc. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

(f) The methods and procedures to be used for expeditious contaminant cleanup.

(g) The name of the individual who will report any spills and who will follow up with complete documentation.

(h) The 24-hour spill notification telephone numbers including NRC, OERS, County, and local police and/or Emergency Response organization as appropriate and required. The plan shall include 24-hour emergency number for the GQAR, Project Engineer, and Resident Engineer.

(6) A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

1.10.4 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, report forms, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.11 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.12 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such

action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 NOT APPLICABLE

PART 3 EXECUTION

3.1 IMPLEMENTATION

3.1.1 Planning

No physical work at the site shall be started until an environmental plan has been approved or specific authorization is obtained to start a phase of the work. Preparation and submittal of supplemental plans may be required if additional environmental protection planning is found necessary for later phases of work. As a minimum the plan shall include the sections indicated below:

(1) A contamination-prevention section listing all potentially hazardous petroleum products and toxic materials on the job site and corresponding provisions to be taken to prevent accidental or intentional introduction of such materials into any waterway, the air, or the ground. Section is to include plans for preventing polluted runoff from plant, equipment parking, and maintenance areas from entering local water bodies. MSDS information shall be provided to the project prior to bringing material on-site.

(2) A containment and cleanup section including the procedures, instructions, and reports to be used in the event of an unforeseen oil or chemical spill. This section shall include as a minimum:

(a) The name of the individual who will be responsible for implementing and supervising the containment and cleanup. This person shall be on-site during the handling or disposition of all potentially hazardous materials.

(b) A list of materials and equipment to be immediately available. For all work in or adjacent to water a 60-meter-long minimum containment boom, skimming equipment, and an absorbent cleanup kit shall be available at the job site. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(c) The names and locations of suppliers of containment materials and names and locations of additional fuel oil recovery, cleanup, restoration, and material placement equipment available in case of an unforeseen spill emergency.

(d) The methods and procedures to be used for expeditious cleanup.

(e) The name of the individual who will report any spills and who will follow up with complete documentation.

3.1.2 Spill Protection

Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, and waste washings from entering public lands or waters. The Contractor shall provide and utilize the following prevention/cleanup materials:

(1) Fuel dispensing vehicles shall carry a fuel containment berm such as Blue Ribbon Environmental (BRE) Tanker Fueling Berm spill kit on board at all times.

(2) Overnight containment berm for all vehicles stored unattended overnight such as BRE Port-A-Berm.

(3) Emergency spill response kit to be available within 15 minutes transport time to equipment performing work such as BRE-PZ-HMR-25G-H.

(4) Emergency spill absorbent matts (10 – 18”x18”) to be carried on board equipment performing work such as BRE-PZ-MT-1818.

(5) Blue Ribbon Environmental’s corporate office phone number is 800-436-1050, or 509-489-1704.

3.1.3 Coordination

Prior to the work a meeting shall be held with the Government to develop mutual understandings relative to the administration of the environmental protection program.

3.1.4 Completion

Before this contract is completed all restoration, cleanup, and other work required to leave the site in an acceptable condition shall have been completed. Final payment will not be made until the environmental protection requirements have been met.

3.2 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

3.3 ENVIRONMENTAL LITIGATION

3.3.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts or omissions of the Contractor or a subcontractor at any tier not

required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this contract. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provision thereof.

3.3.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

3.4 HAZARDOUS WASTE

(1) Standards Applicable to Generators of Hazardous Wastes, 40 CFR 262, shall be complied with for the on-site handling and storage of all hazardous waste generated by the project.

(2) Hazardous waste shall not be stored on the ground, near the water or in an area where accidental release of the material can enter waterways. Secondary containment and weatherproof covering shall be used for all storage of hazardous materials or waste.

3.5 DISPOSAL OF HAZARDOUS WASTE

The following shall apply to disposal of any hazardous waste:

(1) The Contractor, where possible, shall use or propose for use materials which may be considered environmentally friendly in that waste from such materials is not regulated as a hazardous waste or is not considered harmful to the environment.

(2) Documentation for analysis, sampling, transportation, and disposal of all hazardous waste streams generated during this contract shall be in accordance with 40 CFR 260-272 and 49 CFR 100-177.

(3) A copy of all hazardous waste determinations, sample results, and shipping manifests shall be furnished to the Government Quality Assurance Representative (GQAR) to verify compliance with Federal, State, and local regulations.

(4) All hazardous wastes shall be removed from the Project for proper disposal within 90 days of waste generation. All hazardous waste shall be packaged, labeled, and marked in accordance with 40 CFR 261 and 40 CFR 262. All hazardous waste shall be stored in accordance with 40 CFR 264.

(5) Certificates of Destruction or Disposal Certificates shall be submitted for all hazardous wastes within 14 days of actual disposal.

(6) The Contractor's Environmental Protection Agency (EPA) identification number shall be used to dispose of all hazardous wastes

generated by the Contractor and its subcontractors under this contract. This is construed to mean all hazardous wastes the Contractor or subcontractors generate from materials brought on the site for the purpose of performing work under the terms of the contract.

(7) The Government's EPA identification number shall be used to dispose of all hazardous waste generated from Government-owned facilities on the project. This is construed to mean hazardous wastes generated from the repair, demolition, or removal of any existing materials and buildings from Government facilities and is not intended to include any wastes generated by the Contractor in the performance of its work.

(8) It is the responsibility of the Contractor to prepare all hazardous waste manifests. The Contractor shall prepare manifests for Government signature when the Government's EPA identification number is used. The manifest shall be submitted 48 hours in advance of the waste being removed. The Environmental Compliance Coordinator (ECC) will review and sign the manifest when the transporter arrives.

(9) Hazardous or dangerous waste shall be recycled to the maximum extent possible. Placing hazardous or dangerous waste in a permitted hazardous waste landfill shall be the last resort. If such a facility is necessary, the Contractor shall dispose of it in compliance with Federal, State and local requirements.

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

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SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. IEEE C57.13, "Requirements for Instrument Transformers"). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: http://www.aci-int.org

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: http://www.aashto.org

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
E-mail: info@ansi.org
Internet: http://www.ansi.org/
Note --- Documents beginning with the letter "S" can be ordered from:

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674
E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 Hoes Lane
Piscataway, NJ 08855-1331
Ph: 732-981-0060
Fax: 732-981-1712
E-mail: customer.services@ieee.org
Internet: http://www.ieee.org

INTERNATIONAL CODE COUNCIL (ICC)
5203 Leesburg Pike, Suite 600
Falls Church, VA 22041
Ph: 703-931-4533
Fax: 703-379-1546
E-mail: webmaster@iccsafe.org
Internet: http://www.intlcode.org

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)
127 Park Street, NE
Vienna, VA 22180-4602
Ph: 703-281-6613
Fax: 703-281-6671
E-mail: info@mss-hq.com
Internet: http://www.mss-hq.com

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209
Ph: 703-841-3200
Fax: 703-841-3300
E-mail: webmaster@nema.org
Internet: http://www.nema.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: http://www.nfpa.org

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)
400 Commonwealth Drive
Warrendale, PA 15096-0001
Ph: 724-776-4841
Fax: 724-776-0790
E-mail: sae@sae.org
Internet: http://www.sae.org

UNDERWRITERS LABORATORIES (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096
Ph: 847-272-8800
Fax: 847-272-8129
E-mail: northbrook@us.ul.com
Internet: http://www.ul.com/

U.S. ARMY CORPS OF ENGINEERS (USACE)

Order CRD-C DOCUMENTS from:

U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Rd.
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Fax: 601-634-2388
E-mail: mtc-info@erdc.usace.army.mil
Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

Order Other Documents from:

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2803 52nd Avenue
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Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: http://www.usace.army.mil/publications
or http://www.hnd.usace.army.mil/techinfo/engpubs.htm

U.S. DEPARTMENT OF TRANSPORTATION (DOT)
400 7th Street, SW
Washington, DC 20590
Ph: 202-366-4000
Internet: http://www.dot.gov

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
CODE OF FEDERAL REGULATIONS (CFR)
FEDERAL SPECIFICATIONS (FS)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: http://www.archives.gov

Order documents from:

Superintendent of Documents
U.S.Government Printing Office
Washington, DC 20402-9325
Ph: 866-512-1800 or 202-512-1800
Fax: 202-512-2250
E-mail: gpoinfo@gpo.gov
Internet: http://www.gpo.gov

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section in conjunction with SECTION 16277 covers the Contractor's responsibilities for shipment, hauling, and site assembly of the transformer as required for permanent storage at Foster Dam, field testing, provision of erecting engineer services, and for Contractor-furnished training of Government personnel in the theory, operation, and maintenance of the power transformer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.13	(1993) Requirements for Instrument Transformers

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Transformer Movement Plan; G, AOA transformer movement plan detailing movement of the transformer from the nearest accessible railhead to Foster Dam, to its final storage location at Foster Dam shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.3, "TRANSFORMER MOVEMENT PLAN").

2. Site Delivery Inspection Procedure and Schedule; G, AO

A transformer site delivery inspection procedure and schedule detailing the step-by-step activity listings and schedule that demonstrates the dependency of one activity on another, shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.5.1, “Site Delivery Inspection Procedure and Schedule”).

3. Transformer Site Assembly Procedure; G, HDC

A transformer site assembly procedure detailing the reassembly of the transformer, heated oil filling, recommended interconnections as required for permanent storage, and final field testing shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.8.2, "Transformer Site Assembly Procedure").

SD-06 Test Reports

1. Transformer Oil Field Test Report; G, AO

A transformer oil field test report, showing that the transformer oil meets the requirements of SECTION 16277 (paragraph 2.13.3) prior to filling of the transformer at Foster Dam, shall be submitted for approval not later than 48 hours following completion of the tests (see paragraph 3.8.3, "Handling and Installation of Transformer Oil").

2. Transformer Field Test Report; G, AO

A transformer field test report shall be submitted for approval not later than 14 calendar days following completion of the field tests (see paragraph 3.10, "FIELD TESTS").

SD-08 Manufacturer's Instructions

Training Outline; G, AO

A training outline covering the material to be used for performance of the on-site training session, including a schedule, shall be submitted for approval not later than 30 calendar days prior to the completion of the transformer field tests (see paragraph 3.12, "CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL")

SD-09 Manufacturer's Field Reports

1. Impact Recorder Summary Report; G, AO

The impact recorder summary report, including a copy of the impact recorder log, shall be submitted for approval within 24 hours after delivery of the transformer f.o.b. Foster Dam (see paragraph 3.5.1, "Site Delivery Inspection Procedure and Schedule")

2. Erecting Engineer's Record; G, AO

The transformer manufacturer's erecting engineer's record shall be submitted for approval upon request by the Government, or within 7 calendar days following completion of all site work (see paragraph 3.11, "ERECTING ENGINEER SERVICES”).

3. Site Delivery Inspection Report; G, AO

The site delivery inspection report shall be submitted for approval within 48 hours following completion of the site delivery inspection (see paragraph 3.5.3, "Site Delivery Inspection Report").

1.4 POINTS OF CONTACT FOR SHIPPING AND SITE ACCESS

1.4.1 U.S. Army Corps of Engineers

Foster Dam Project Site
Assistant Project Manager
Tom Voldbaek
(541) 367-5124

1.4.2 Pertinent Rail Information

The closest railroad access to Foster Dam is a railroad spur provided by Albany & Eastern Railroad. Points of contact for coordinating shipping and site access are as follows:

Railroad	Albany & Eastern Railroad
Address	1784 S. Main St., Lebanon, Oregon 97355
Contact	Mike Root
Telephone	541-259-6470
Weight limits	Gross railcar weight limitation to siding at Foster, Oregon, is 263,000 lbs. Gross railcar weight limitation to siding at Lebanon, Oregon, is 286,000 lbs. (next nearest siding)
Rail siding owner, Foster, Oregon	Willamette Industries
Contact	Jerry Underwood
Telephone	541-367-2121

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 TRANSFORMER SHIPMENT PREPARATION

The transformer equipment, accessories, and spare parts shall be prepared in such manner as to protect them from damage in transit. The Contractor shall be responsible for and make good any and all damages incurred in loading or in transit. It is the Contractor's responsibility to supply units of shipping dimensions and weight that allow for transport from the point of manufacture to Foster Dam. Heavy parts shall be securely mounted on skids to facilitate handling. If beams are required to distribute loading on the railcar, their weight and height shall be taken into consideration when

determining shipping dimensions and weight, and the beams shall be provided as part of the contract. Any internal blocking or bracing that is to be removed from the transformer at its destination shall be colored bright yellow, and specifically addressed in the Transformer Site Assembly Procedure. Any material to be returned to the vendor after transformer shipment or installation is complete shall be returned at the Contractor's expense, and shall bear identification of material ownership and shipping address. Materials not so marked will be disposed of at the Government's discretion. All crates containing equipment that should be stored indoors shall be marked "STORE INDOORS" in 2-inch high lettering. For items that are required to be shipped and stored in a particular arrangement such as bushings, shall be marked with "THIS SIDE UP" or similar in 2-inch high lettering. The transformer cooling fans, including associated mounting hardware, shall be packaged and shipped in separate wooden shipping crates for indoor storage at the Government facility.

3.2 SHIPPING

3.2.1 Preparation for Shipment

The transformer shall be delivered without oil. The tank shall be purged, filled with dry nitrogen or dry air (dew point of -50 degrees-C maximum), under a pressure sufficient to ensure that temperature changes encountered in transit will not result in negative pressures, and then sealed. A pressure gauge shall be installed at the gas connection, and a shipping marker shall be attached near the gas connection showing the absolute pressure, type of gas, temperature, and date the tank was sealed. At time of shipment, a dew point test shall be performed on the gas in the transformer. The dew point temperature and the test method used shall be shown on the shipping marker. Transformers shipped by rail shall be shipped on rail cars equipped with hydraulic draft gear, hydraulic snubbing devices.

3.2.2 Impact Recorder

The transformer shall be shipped with a 3-axis digital impact recorder with GPS tracking, such as the Lat-Lon “RoadRider” monitoring and tracking system. The impact recorder for the transformer shall be mounted on a plate that is part and parcel to the transformer and covered with a shield. The impact recorder shall be inspected before removal for tight securement, in position as loaded, protective cover intact, seals in position, and whether the area the device is secured to is intact, loose, or deformed. Any exceptions to the shipment observed shall be brought to the attention of the COR. The digital impact recorder shall be calibrated to record and transmit impact data greater than 0.75g, and shall also provide timed reports every 4 hours. The impact recorder “real-time” data shall be Internet viewable, and the Contracting Officer shall be provided with the “login” and “password” for site access prior to shipment. Mounting provisions for the impact recorder shall be removed after delivery of the transformer.

3.2.3 Shipment to Foster Dam

After completion of factory testing and the transformer has been released for shipment by the COR, the transformer and ancillary equipment shall be prepared for shipment and transported from the Contractor's manufacturing facility to Foster Dam. If transported by rail, the Contractor shall off-load the transformer at the rail siding in Foster, Oregon, on to truck transport for delivery to the Foster Dam powerhouse.

3.2.4 Shipment of Transformer Oil

The transformer oil shall be shipped to the job-site in suitable tank trucks. The oil shall remain stored in the trucks at the job-site until the transformer is ready to be filled. The cost of providing and returning the oil tank trucks shall be borne by the Contractor, and shall be included in the contract price. The Government will not be responsible for any charges accruing on oil trucks due to untimely delivery.

3.3 TRANSFORMER MOVEMENT PLAN

The Contractor shall be responsible for the transport and movement of the transformer to Foster Dam. A transformer movement plan shall be submitted for approval, and shall include the following as a minimum. Government approval of the movement plan does not constitute approval by railroad or transportation authorities.

(1) The method and means of lifting and off-loading the transformer from the railcar (if shipped by rail) and onto a transport truck.

(2) Drawings or detailed maps showing the intended route to be taken by the transporter to Foster Dam.

(3) Wheel, axle, outrigger, and track loads of the transport truck, as applicable, and their locations along the route. Axle loading and road loading limitations shall be coordinated with the applicable state and county Departments of Transportation.

(4) The method and means of transformer handling and placement into its final storage location at Foster Dam, including equipment, loading plans for equipment, and intended route while at the project site.

3.4 HAULING

The dimensions and weight (without oil) of the largest piece of each unit as shipped by the Contractor shall not exceed that allowed for truck transport and for movement at Foster Dam. In the event the shipping dimensions or weight of the largest piece exceed those allowed for truck transport or within the powerplant, the unit shall be designed such that its weight and dimension can be safely reduced in the field to that allowed for transport. Any limitations affecting transportation shall not become the basis for claims or damages, or for extension of time for completion of work.

3.5 SITE DELIVERY INSPECTIONS

3.5.1 Site Delivery Inspection Procedure and Schedule

A transformer site delivery inspection procedure and schedule shall be submitted, and shall contain a step-by-step activity listing and a schedule that demonstrates the dependency of one activity on another. Included in the procedure shall be the persons on each shift responsible for superintendence and safe clearance. Activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included in the plan. An Impact Recorder Summary Report shall be submitted within 24 hours after delivery of the transformer. All material and

equipment received shall be checked by the Contractor against shipping lists for shortage and damage.

3.5.2 Sample Site Delivery Inspection Procedure

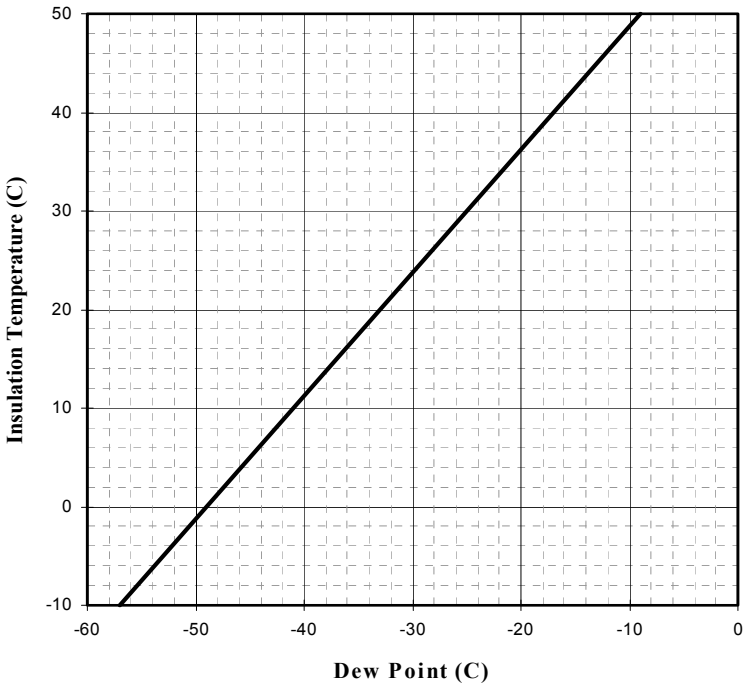
The following outline is based on the expected site delivery inspection and shipping procedure, and is intended to show the scope of the required work. The actual step-by-step procedure submitted shall be applicable to the transformer actually furnished, may differ from the following procedure, and shall list methods of repair and/or retesting if unacceptable results of the inspections are obtained.

(1) Perform an on car external inspection of the transformer and associated equipment for shipping damage, including signs of movement on the transporter, and loose or damaged tie rods.

(2) Check the tank gas pressure by use of a pressure gauge. Tank pressure shall be positive.

(3) Perform a dew point check. The dew point shall not exceed the temperatures for corresponding insulation temperatures, as indicated on the chart, below.

DEW POINT LIMITS



(4) Inspect the impact recorder charts in the presence of the COR for any indication of excessive impacts during shipment. If damage due to shipment is suspected, a core insulation test shall be performed. If the transformer fails the core insulation test, recommendations for repair shall be included in the site delivery inspection report.

(5) If shipping damage is suspected, perform an on car internal inspection of the suspect transformer to check for internal damage such as loose coils, broken lead supports, dislodged end insulation, frayed lead insulation, core grounds, or loose nuts or bolts. A temporary cover shall be erected over the transformer, and the manhole covers shall be cleaned before the tank is opened. Prior to performing the internal inspection, the tank shall be purged with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. The duration the inside of the tank is exposed to the atmosphere shall be recorded, and kept to a minimum. Reseal the transformer after the internal inspection has been completed, and repressurize the transformer to 2 psi with dry nitrogen or dry air. Positive pressure shall be maintained during transportation of the transformer to the project, off loading, and until such time that the tank is breached during assembly. An additional dew point check shall be performed 24 hours after reseal of the transformer.

(6) All inspections listed in (1) through (5), above, shall be repeated after the transformer has been trucked to Foster Dam.

3.5.3 Site Delivery Inspection Report

After completion of the transformer site delivery inspection, the Contractor shall submit a site delivery inspection report, based upon the approved procedural outline. The site delivery inspection report shall include, but not necessarily be limited to, the following:

(1) Gas analysis and pressure.

(2) Visual inspection log.

(3) Core insulation test results (if required).

(4) Proposed method of repair of any damage incurred during shipment.

(5) Procedure for diagnosis and correction in the event of loss of positive gas pressure during shipment.

3.6 TRANSFORMER DRY-OUT

Notwithstanding any differences from the procedures outlined above, the transformer shall be received by the Contractor at the railhead and subsequently transported to the project site for subsequent assembly by the contractor. It is not anticipated that it will be necessary to dry-out the transformer; however, if gas pressure has been lost during shipment or shipping damage is suspected, this dry-out may be necessary. If it becomes necessary to dry-out any part of the transformer, the Contractor shall perform all such operations as required at no additional cost to the Government.

3.7 UNLOADING AND SITE MOVEMENT

The Contractor shall off-load the transformer at Foster Dam, and placed in its permanent storage location as directed by the Contracting Officer. All items of equipment shall be protected in a manner satisfactory to the COR. All material and equipment received shall be checked by the Contractor against shipping lists for shortage and damage.

3.8 SITE ASSEMBLY

3.8.1 General

The Contractor shall be responsible for the complete assembly and oil filling of the transformer as required for permanent storage, and final field testing. All electrical equipment and supplies, machinery parts, and similar equipment necessary to be stored under cover shall be identified and submitted for approval by the COR. The transformer cooling fans shall not be installed on the coolers for long-term transformer storage. The fans and associated mounting hardware shall remain in their shipping crates and turned over to the Government for indoor storage.

3.8.2 Transformer Site Assembly Procedure

A transformer site assembly procedure shall be submitted for approval, which shall include a step-by-step activity listing and a proposed time line for each specific task. Included in the assembly procedure shall be the procedure for heated oil filling of the transformer under vacuum, with a listing of the equipment to be used. Any activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included. As a minimum, the assembly procedure should include:

(1) Step-by-step assembly of the transformer.

(2) Means for maintaining a slight positive pressure in the transformer tank with the dry nitrogen gas until the start of vacuum filling.

(3) Provide a temporary weather cover over the transformer and purifier. Purge the tank with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. Remove any interior shipping braces. Install and connect the bushings, and cooling radiators.

(4) Hot oil fill the transformer under vacuum to the normal operating level per the manufacturer's requirements.

(5) Test the CT ratio and polarity in accordance with IEEE C57.13, (paragraphs 6.1.4 and 6.4).

(6) Check the operation of the rapid pressure rise relay.

(7) Pressure test the complete transformer with pressure at the top of the tank at 4 psi for not less than four hours with oil at the normal level in the tank. Check for oil leaks or a reduction in pressure which would signify a gas leak.

(8) Field test the transformer per the requirements of paragraph 3.10, “FIELD TESTS”. All field tests to be performed, including their sequence, method, and acceptance criterion shall be included in the assembly procedure.

3.8.3 Handling and Installation of Transformer Oil

The Contractor will be required to provide a high-vacuum type oil purifier for processing the transformer oil under vacuum and heat during filling of the transformer tank after moved to its permanent storage location, in accordance with the site assembly procedure. After filling with oil, the transformer shall be thoroughly dried by vacuum processing with circulated heated oil per the requirements of the approved transformer site assembly procedure. No Government provided power source will be available to the Contractor for this equipment. The oil supplied under these specifications will be handled from the tank truck to the transformer via the high-vacuum purifier. The oil shall be tested upon arrival to the site prior to filling of the transformer. If the tanker truck has separate oil storage sections, each section containing oil shall be tested. The tests shall comply with the requirements of SECTION 16277 (paragraph 2.12.3, "Chemical, Physical and Electrical Characteristics") and a Transformer Oil Field Test Report shall be submitted for approval prior to filling. Any nonconformance with the required oil characteristics shall be remedied, at no cost to the Government, by a process submitted for approval. The Contractor shall provide any temporary oil storage facilities required for handling and processing the transformer oil. The Contractor shall submit an oil spill plan and provide the necessary equipment to contain an oil spill, as required in SECTION 01355.

3.9 TOUCH-UP PAINTING

Equipment damaged or abraded in shipment shall be thoroughly cleaned, and the damaged areas shall be given one coat of primer and one finish coat of paint. All finished surfaces to receive primer on which the factory coating has deteriorated or been damaged shall be cleaned by means of solvents, degreasers, light sanding or polishing with 240 grit aluminum oxide paper or cloth moistened with Kerosene, or other approved means which removes all grease, paint markings, dirt, rust, and other foreign substances. Appropriate measures shall be taken to protect adjacent surfaces and equipment from overspray or paint splatter. The use of wet or dry cloths or paper shall be as approved by the COR on an individual basis. Primer paint and finish coats shall be as specified in SECTION 16277 (paragraph 3.3, "FACTORY CLEANING AND PAINTING").

3.10 FIELD TESTS

After the transformer has been filled with oil, the bushings installed, and assembly of the transformer is complete, the Contractor shall, under the supervision of the transformer manufacturer's erecting engineer, perform field tests as approved in the Transformer Site Assembly Procedure. The Contractor shall furnish five certified copies of the Transformer Field Test Report. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The following tests shall be performed on the transformer prior to final acceptance by the Government:

(1) Winding insulation resistance of each winding to ground and between windings (Megger Test).

(2) Power Factor test of each transformer winding.

(3) Transformer Turns Ratio test (TTR) on each tap.

(4) Transformer oil (combustible gas-in-oil).

(5) Power Factor Test of each transformer bushing.

(6) Leakage Reactance Measurement Tests. Leakage reactance measurement tests shall be performed between the high-voltage winding and the low-voltage winding, using the same model test equipment and methods as used in the manufacturing facility. The leakage reactance test results shall not deviate more than 0.5 percent as compared to the factory test reports. Deviations in excess of 0.5 percent shall be explained to the satisfaction of the COR, and may be grounds for requiring an internal inspection of the transformer by the Contractor, at no expense to the Government, to determine the cause.

(7) Sweep Frequency Response Analysis Test. A sweep frequency response analysis (SFRA) test shall be performed, using the same equipment and methods as used during the transformer factory acceptance testing. The proposed SFRA test equipment, setup, and test procedure shall be included in the field test procedures submittal. The SFRA test results for each unit shall be compared with the factory acceptance test "baseline" results, to determine the integrity of the core and winding structure after shipment from the manufacturing facility. The SFRA data obtained during the factory acceptance testing shall be loaded into the test equipment software to facility wavetrace comparisons. Wavetrace comparisons are expected match closely, with little differences between matched scans. Wavetrace comparisons that do not match closely shall be explained to the satisfaction of the COR, and may be grounds for transformer rejection, requiring an internal inspection of the transformer by the Contractor to determine the cause of the cause of the deviations, or requiring the transformer to be sent back to the manufacturing facility for repair at no expense to the Government.

3.11 ERECTING ENGINEER SERVICES

The transformer manufacturer's erecting engineer shall be responsible for the transformer, and for the oversight and correctness of instructions given during the assembly of the transformer in preparation for permanent storage. The erecting engineer shall keep an Erecting Engineer's Record of all data taken during site assembly and installation, and shall submit to the Government one copy either on request or on completion of all site work. The erecting engineer shall be responsible for performance of the following work:

(1) Witness and guide off-loading and loading of the transformer at the rail siding, and off-loading from the transport truck at Foster Dam.

(2) Witness and guide the hauling of the transformer by truck between the rail siding and Foster Dam.

(3) Witness the movement of the transformer at Foster Dam to its final storage location.

(4) Witness and guide the assembly of the transformer, including the oil filling process.

(5) Witness and guide the final acceptance testing of the transformer.

(6) Perform training of Government personnel as described, below.

3.12 CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL

Immediately following placement of the transformer into its permanent storage location and completion of all field tests, the Contractor shall conduct a course at Foster Dam in the theory, operation, and maintenance of the power transformer. The actual date in which the training is to be performed shall be coordinated with the COR. The course shall include theory of basic circuits, the transformer system trouble analysis, and operations. Particular attention shall be paid to the accessories listed in SECTION 16277 paragraph 2.8, "ACCESSORIES". The course shall be of 4 hours minimum duration for approximately 10 Government personnel. Course material shall include the use of site specific Operations and Maintenance Manuals, to the maximum extent possible. The Government may videotape the training session for future use by the Government. The Contractor shall submit a Training Outline of the material to be covered, and a proposed schedule. In addition to this formal training, the Contractor shall make available during the same day 4 hours of 'one-on-one' training with powerplant personnel, as required.

-- End of Section -

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SECTION 16277

CLASS II POWER TRANSFORMER

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SECTION 16277

CLASS II POWER TRANSFORMER

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section covers the supply of one single-phase generator step-up (GSU) power transformer rated 29,000 kVA, 230 kV GrdY/132.8 kV high-voltage, 13.2 kV low-voltage, Class OFAF cooling.

1.2 DESCRIPTION OF WORK

The Contractor shall be responsible for the design, manufacture, factory testing, and delivery f.o.b. to Foster Dam, one single-phase GSU power transformer to be used as a spare at the Detroit Dam powerhouse. The general arrangement of the existing single-phase transformers at the Detroit Dam Powerhouse, operating locations, and interconnections with the existing powerhouse equipment are as shown in the reference drawings. All transformer movement and site work performed at Foster Dam shall be witnessed by the manufacturer's erecting engineer, as required in SECTION 01600. The transformer shipment, hauling and site assembly are as specified in SECTION 01600. The spare transformer to be provided shall be designed with dimensions and locations of equipment and devices to facilitate installation as a spare for any of the existing Detroit Dam single-phase GSU power transformers.

1.3 REFERENCED PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A 504	(1993; R 1999) Wrought Carbon Steel Wheels
ASTM A 53	(2004) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 343	(1999) Standard Test Method for Alternating-Current Magnetic Properties of Materials at Power Frequencies Using Wattmeter-Ammeter-Voltmeter Method and 25-cm Epstein Test Frame
ASTM A 718	(1991) Standard Test Method for Surface Insulation Resistivity of Multi-Strip Specimens
ASTM D 923	(1997) Sampling Electrical Insulating Liquids
ASTM D 1533	(2000) Water in Insulating Liquids (Karl Fischer Reaction Method)

ASTM D 3487	(2000) Mineral Insulating Oil Used in Electrical Apparatus
ASTM D 4059	(2000) Analysis of Polychlorinated Biphenyls in Insulating Liquids by Gas Chromatography

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1	(2000) Welding Procedure and Performance Qualification

ASME INTERNATIONAL (ASME)

ASME B1.1	(2003) Unified Inch Screw Threads (UN and UNR Thread Form)
ASME B1.20.1	(1983; R 2001) Pipe Threads, General Purpose, Inch
ASME B16.1	(1998) Cast Iron Pipe Flanges and Flanged Fittings
ASME B16.24	(2001) Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 400, 600, 900, 1500, and 2500

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1926	(2003) Safety and Health Regulations for Construction

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.12.00	(2000) General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.12.70	(2000) Standard Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.12.80	(2002) Terminology for Power and Distribution Transformers
IEEE C57.12.90	(1999) Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.13	(1993) Requirements for Instrument Transformers
IEEE C57.19.00	(1991; R 1997) Standard General Requirements and Test Procedures for Outdoor Power Apparatus Bushings
IEEE C57.19.01	(1991, 2000) Performance Characteristics and Dimensions for Outdoor Apparatus Bushings

IEEE 693	(1997) IEEE Recommended Practice for Seismic Design of Substations

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-70	(1998) Cast Iron Gate Valves, Flanged and Threaded Ends
MSS SP-80	(2003) Bronze Gate, Globe, Angle and Check Valves

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(1997) Enclosures for Electrical Equipment (1000 volts Maximum)
NEMA AB 3	(2001) Molded Case Circuit Breakers and Their Application
NEMA C57.12.10	(1997) Transformers - 230 kV and Below, 833/958 Through 8,333/10,417 kVA Single-Phase, and 750/862 Through 60,000/80,000/100,000 kVA Three-Phase Without Load Tap Changing, and 3,750/4,687 through 60,000/80,000/100,000 kVA with Load Tap Changing Safety Requirements
NEMA C80.1	(1994) Rigid Steel Conduit - Zinc Coated (GRC)
NEMA CC 1	(1993) Electrical Power Connection for Substations
NEMA FB 1	(2003) Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
NEMA ICS 2	(2000) Industrial Controls and Systems: Controllers, Contactors, and Overload Relays Rated 600 Volts
NEMA SG 4	(2000) Alternating-Current High-Voltage Circuit Breaker
NEMA WC 5	(1992; Rev 2 1996) Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
NEMA WC 70	(1999) Non-Shielded Power Cables Rated 2000 Volts or less for the Distribution of Electrical Energy

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2005) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 1	(2000) Flexible Metal Conduit
UL 467	(2004) Grounding and Bonding Equipment
UL 514B	(2004) Conduit, Tubing and Cable Fittings
UL 886	(1994; Rev thru Apr 1999) Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. The following shall be submitted in accordance with SECTION 01330, "SUBMITTAL PROCEDURES", unless otherwise indicated below:

SD-02 Shop Drawings

1. Outline, Assembly and Detail Drawings; G, HDC

Outline, assembly and detail drawings of all equipment to be furnished under the contract, together with final weights of the equipment and overall dimensions, shall be submitted for approval within 90 calendar days after date of award to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. These drawings shall include the following, at a minimum:

a. Transformer nameplate information.

b. Overall dimensions and layout of the assembled transformer, including structural supporting base, jacking locations, lifting locations, pulling-eye locations, seismic anchoring, and clearances required for untanking or disassembling the transformer, details of gasketed joints, and welded joint details.

c. Locations of all bushings and ancillary equipment including current transformers, valves, devices, gauges, relays, terminal cabinets, radiators and fans, conduit, and junction boxes.

d. Transformer winding configuration diagrams.

e. Schematic and wiring diagrams, and connection diagrams showing terminal block and conductor designations shall be made as seen by an observer of the actual equipment arrangement. Space shall be provided for addition of devices where mounting space exists on the structure.

2. Installation Drawings; G, HDC

Installation drawings as required for the installation of the transformer shall be submitted for approval within 120 calendar days after contract award. Included in these drawings shall be the

proposed seismic anchorage system. (see paragraph 2.1.6.1, "Seismic Anchorage Design").

SD-05 Design Data

Descriptive Data; G, HDC

Descriptive data or catalog data of all accessory devices and ancillary equipment provided with the transformer shall be submitted for approval within 90 calendar days after date of award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications.

SD-06 Test Reports

1. Transformer Factory Acceptance Test Report; G, HDC

The transformer factory acceptance test report shall be submitted for approval not later than 30 calendar days following completion of the factory acceptance tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

2. Bushing Design Tests; G, HDC

The transformer bushing design test reports shall be submitted for approval not later than 30 calendar days following completion of the tests (see paragraph 3.2.3.1, "Bushing Design Tests"). If certified copies of previously conducted bushing design tests are submitted in-lieu of new test results, they shall be submitted not later than 180 calendar days prior to delivery of the transformer.

3. Bushing Routine Tests; G, HDC

The transformer bushing routine test reports shall be submitted for approval not later than 30 calendar days following completion of the tests (see paragraph 3.2.3.3, "Bushing Routine Tests").

4. Bushing Current Transformer Tests; G, HDC

The transformer bushing current transformer test reports shall be submitted for approval not later than 30 calendar days following completion of the tests (see paragraph 3.2.3.4, "Bushing Current Transformer Tests").

SD-07 Certificates

1. Transformer Oil Certification; G, HDC

Transformer oil certification shall be submitted for approval a minimum of 14 calendar days prior to the start of factory tests (see paragraph 2.12.1, "Quantity and Transformer Oil Certification").

2. Notification of the Date of Factory Tests; G, HDC

The contractor shall notify the COR, in writing, 21 calendar days in advance of when the transformer will be ready for factory

acceptance tests, so that the tests may be witnessed by a Government Representative. If factory testing in a foreign country is proposed, the Contractor shall notify the COR in writing of the preliminary testing dates, not later than 60 days prior to the start of factory tests (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

SD-08 Manufacturer's Instructions

Factory Test Procedures; G, HDC

The transformer factory test procedures shall be submitted for approval not later than 60 calendar days prior to the start of the factory acceptance tests (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

PART 2 PRODUCTS

2.1 TYPE AND RATING

2.1.1 General

The transformer to be furnished under these specifications shall be designed as a spare transformer to replace one of the existing Pennsylvania single-phase GSU transformers presently in-service at Detroit Dam. The transformer shall be a single-phase, two-winding oil immersed type suitable for outdoor operation. The transformer shall be forced oil-cooled/forced air-cooled type, Class OFAF, and shall be of a design that has an established record of satisfactory operation with the type of oil preservation system specified. The dimensions of the transformer shall not exceed the limits shown on the drawings.

2.1.2 Transformer Limiting Dimensions and Equipment Arrangement

The transformer limiting dimensions and equipment arrangement shall be as indicated on contract drawing DEP-5.5-6-1A40/1. Particular attention shall be paid to the following to assure correct interface with the Detroit Powerplant, and to require a minimum of field modifications during future installation of the spare transformer:

(1) Low-voltage bushing throat connections. The location, dimensions, and flanges of the low-voltage bushing throats shall be the same as the existing transformer to the maximum extent possible, to assure proper interconnection with the existing isolated-phase bus.

(2) High-voltage and high-voltage neutral bushings. The position and location of the terminals of the high-voltage and high-voltage neutral bushings shall be the same as the existing transformer to assure proper interconnection with the existing terminal connectors.

(3) Control cabinet. The location and position of the transformer control cabinet shall be the same as the existing transformer to assure proper alignment directly above the existing embedded conduit, and allow for proper interconnection.

2.1.3 Requirements

Except as otherwise specified herein, the transformer, accessories, and spare parts shall conform to the applicable requirements of IEEE C57.12.00, IEEE C57.12.70, IEEE C57.12.80 and IEEE C57.12.90; and NEMA C57.12.10. Although the rating of the transformer exceeds the rating governed by NEMA C57.12.10, specific requirements included herein referencing NEMA C57.12.10 shall be met.

2.1.4 Ratings and Electrical Characteristics

The ratings and electrical characteristics of the transformer shall be as follows:

DESCRIPTION	**230Kv TRANS. RATINGS**
Continuous ratings, at 65°C, on all taps, kVA	29,000
Frequency	60 Hz
Number of phases	1
Rated voltage, kV	
a. High-voltage winding	230
b. Low-voltage winding	13.2
Winding Connections	
a. High-voltage winding	Grounded-Wye
b. Low-voltage winding	Delta
Impedance at 100% OFAF full-load rated current, percent (subject to the requirements of paragraph 2.1.5)	7.2
Polarity	Subtractive
Basic Impulse Insulation Levels (BIL)	
a. Line ends of the high-voltage windings, not less than	750 kV
b. Neutral ends of the high-voltage windings, not less than	150 kV
c. Low-voltage windings, not less than	110 kV
Winding Taps	
a. Taps in low-voltage windings	None
b. Taps (full capacity) in high-voltage windings	
1) Tap 'A' (percent of high-voltage rating)	105.0
2) Tap 'B' (percent of high-voltage rating)	102.5
3) Tap 'C' (percent of high-voltage rating)	100.0
4) Tap 'D' (percent of high-voltage rating)	97.5
5) Tap 'E' (percent of high-voltage rating)	95.0
Efficiency, percent	
Minimum efficiency at 100% rated kVA and 1.0 power factor, percent	99.62
Audible Sound Level, dB	
Maximum average sound level at rated voltage and frequency, with all cooling fans in operation, as measured in accordance with paragraph 3.2.2.e.	70
Weight, pounds	
Maximum transformer total weight, completely assembled and oil-filled with all accessories installed	130,000

2.1.5 Impedance Tolerance

The impedance tolerance shall be limited to a maximum of 3 percent, at the 100% OFAF full-load rated current, to reduce circulating current when wye-connected.

2.1.6 Seismic Requirements

The transformer to be furnished under this contract shall be constructed and assembled to withstand the maximum seismic forces specified. The Contractor shall provide certification supported by testing or analysis stating the seismic capability of the equipment. The existing transformer vaults at the Detroit Dam have rails embedded in the concrete deck, with approximately 1/2-inch of rail above grade. When installed as a spare in the future, the transformer will be pad mounted directly on top of the existing rails without rail removal. Seismic anchorage will be in the concrete adjacent to the existing rails. The space between the transformer base and the concrete will be filled with non-shrink high-strength grout following placement and installation.

2.1.6.1 Seismic Anchorage Design

The seismic anchorage for the transformer shall be designed by the Contractor in accordance with the requirements of this specification. The Contractor shall provide anchorage design calculations performed and stamped by a qualified civil or structural engineer with professional registration. Anchorage shall be designed without relying on effects of friction and shall provide a factor of safety of 1.3 against overturning. Existing concrete strength shall be taken as f'c = 3,000 psi. The Contractor shall provide recommended anchorage details, including anchorage locations, maximum tension and shear per anchor bolt, and anchor bolt specifications. Detail drawings shall be stamped by the engineer performing the calculations.

2.1.6.2 Seismic Code Requirements

The seismic design shall be in accordance with Section 1621, "Architectural, Mechanical and Electrical Component Seismic Design Requirements" of ICC IBC, or the provisions in 1997 IEEE 693 Annex D, whichever produces the more adverse seismic effects. For ICC IBC, use Seismic Use Group III, spectral acceleration S_{DS} = [0.355], I_P = 1.50, and z=h=1. For IEEE 693, the seismic qualification level shall be moderate.

2.2 THERMAL DESIGN

The temperature rise above ambient temperature of the transformer or parts thereof, when tested in accordance with its ratings, shall not exceed the limits of observable temperature rise for oil immersed apparatus as stated in IEEE C57.12.00 (paragraph 5.11.1). The winding temperature rise by resistance shall not exceed 65 degrees-C, and the hottest spot winding temperature rise shall not exceed 80 degrees-C on the tap connections that give the highest losses, with all coolers in operation. In addition, the transformer shall not exceed the above temperature rises when tested at 70 percent of rated kVA with one-half of the oil pumps and associated coolers not in operation. The transformer shall be capable of continuous operation at no-load, self excitation conditions with no auxiliary cooling groups in operation, and operation with part or all of the auxiliary cooling equipment out of service in accordance with paragraph 9.8 of IEEE C57.91. Suitable arrangements shall be provided within the transformer to direct the oil from the coolers through the core and coils. The design of the oil flow control system shall effectively distribute the amount, direction, and velocity of the oil entering the tank from the coolers through the various portions of the core and coils in accordance with their requirements. A design of oil

circulating system that depends solely upon the thermo-siphon action of the oil to remove heat from the core or windings will not be acceptable.

2.3 CORE

The transformer core shall be constructed of high quality, non aging, cold rolled, grain oriented steel especially suitable for the purpose. The core steel laminations shall not exceed 0.011 inch in thickness, and shall be M3 grade equivalent, or better. The use of paper insulation in the core will not be acceptable. Electrical core steel core loss, rms exciting power, rms and peak exciting current, and ac permeability shall be tested in accordance with ASTM A 343. Each roll of sheet steel used shall have the surface insulation resistivity tested in accordance with ASTM A 718. The core shall be carefully assembled and rigidly clamped to insure adequate mechanical strength to support the windings and to prevent shifting of the laminations during shipment, and also to reduce vibration to a minimum under operating conditions. Core joints shall be interleaved. An external bushing for core grounding shall be provided and be provided with a removable strap between the bushing terminal and the tank wall. The bushing shall be rated for not less than 5 kV and shall be located and labeled to avoid confusion with other bushings. The bushing shall be protected with a removable weatherproof metal cover. The transformer core design and construction methods shall be in such a manner to assure that the average sound level due to operation of the transformer and accessories will not exceed 70 dB at rated voltage and frequency as measured in accordance with IEEE C57.12.90.

2.4 WINDINGS

2.4.1 General

The winding conductors shall be of copper, and shall be of a circular coil construction. Consideration shall be given to all factors of service, such as high dielectric and mechanical strength of insulation, coil characteristics, and minimum restrictions to free circulation of oil. Coils shall be made up, shaped, and braced to provide for expansion, contraction, and shrinkage due to temperature changes and aging in service in order to avoid abrasion of insulation and to provide resistance to movement and distortion caused by abnormal operating conditions. Adequate barriers shall be provided between windings and core and between high-voltage and low-voltage windings. End coils shall have additional protection, if required, against normal line disturbances.

2.4.2 Insulation Levels

The transformer shall be designed for BIL of the windings as specified in paragraph 2.1.4, "Ratings and Electrical Characteristics", and shall be capable of withstanding IEEE Standard dielectric tests, in accordance with paragraph 3.2.2, "Power Transformer Tests", corresponding to the specified winding insulation levels.

2.4.3 Short Circuit Capability

The transformer shall be capable of withstanding without injury the mechanical and thermal stresses caused by short circuits on the external terminals of any winding or windings, with rated voltages maintained across the terminals of all other windings intended for connection to sources of energy, under the conditions listed in IEEE C57.12.00 (paragraph 7.1.1).

2.5 NO-LOAD TAP CHANGER

The transformer shall be equipped with an external, manually operated tap changer for changing connections to the taps in the high voltage windings. Taps will be changed only when the transformer is de energized. The tap changer control shall be mounted on the transformer tank at approximately 48 inches above the base of the transformer and shall include an operating hand wheel, indicating pointer and dial, and means for locking the tap changer in any desired tap position. The operating hand wheel, if removable, shall be mechanically interlocked with the tap mechanism to prevent its removal when the mechanism is not in a completed tap position. Transmission of motion from operating hand wheel shaft to taps shall be by interaction of rigid members. The contacts shall be capable of withstanding the full short circuit current of the transformer without injury. The tap changing mechanism shall render it impossible to leave a winding open or short circuited when the operating wheel is placed in a locked position.

2.6 TANK

2.6.1 Construction

The transformer shall be provided with an oil-tight steel tank, with oil-tight covers per the requirements of NEMA C57.12.10 (paragraph 5.8). The tank shall be provided with one or more unobstructed manholes in the cover with minimum dimensions of 24 inches by 24 inches, or 24 inches minimum diameter, to afford easy access to the lower ends of bushings, terminals, and the upper portions of the coils. Suitable positioning guides shall be provided inside the tank to assure the core and windings are in the correct position during assembly. The main transformer tank and any attached compartment that is subjected to operating pressures shall be designed and constructed to withstand, without leakage or permanent deformation, an internal pressure not less than 10 psi. The tanks shall be designed and constructed for vacuum filling (essentially full vacuum) in the field. All valves, fittings and piping affected by vacuum filling shall be of correct design and construction for such filling. Auxiliary compartments such as reservoir tanks, when not designed for vacuum filling, shall be so designated, and suitable isolating valves shall be provided. The joints between the tank and cover, and between tank sections shall be welded, and the design of the joint shall prevent weld splatter from entering the inside of the tank. The Contractor shall submit for approval full information covering details of welded joints.

2.6.2 Gasketing

Gaskets between metal surfaces shall be set in grooves or held in position by retainers so arranged that all parts are metal to metal. The gaskets shall be made of a resilient material that will not deteriorate under the action of hot oil and will remain oil-tight. Nitrile and cork-neoprene gaskets are acceptable. Gaskets of cork or neoprene only will not be allowed. Details of proposed gaskets shall be furnished.

2.6.3 Lifting and Moving Facilities

2.6.3.1 Lifting Facilities

Design loads for lifting eyes, lugs, or hooks shall be two times the actual load to allow for possible unequal lifting forces. Safety factor for lifting eyes, lugs, or hooks (using design loads) shall be in accordance with NEMA C57.12.10 (paragraph 5.3.1). Lifting eyes, lugs, or hooks shall positively keep the lifting cable in place even when the cable is slack. Each transformer shall be provided with the following lifting facilities:

(1) Lifting attachments on the tank cover.

(2) Adequate means for lifting the core and coil assembly from the tank.

(3) Lifting lugs or hooks on the tank adequate for lifting the complete transformer filled with oil.

2.6.3.2 Moving Facilities

Moving features shall be furnished as required for moving the transformer to its final storage location as shown, and shall be in accordance with NEMA C57.12.10 (paragraph 5.3.3).

2.6.4 Oil Level Markings

The 25 degrees Celsius oil level shall be indicated on the outside of the tank by suitable permanent markings, and the change in oil level per 10 degrees Celsius change in oil temperature shall be indicated on the transformer nameplate.

2.6.5 Valves

The transformer shall be provided with suitable valves, conforming with NEMA C57.12.10 (paragraph 5.1.5), except as noted below, for use in filling, draining, and maintaining the transformer and cooling equipment. All oil valves shall be designed for use with insulating oil and shall hold hot oil without leaking. Threaded connections between the valves and the tank will not be allowed. Valves shall conform to MSS SP-70, Type I or II, Class I; or MSS SP-80, Type II, Class A, whichever applicable. All valves shall be brass or bronze, and flanged. Valves shall be provided for the following:

(1) Upper filter and fill connection. A 2-inch globe type valve shall be located such that it can be used to fill the transformer with oil while the transformer is under vacuum.

(2) Vacuum pump connection. A 2-inch globe type valve shall be located on the tank cover for use in connecting a vacuum pump during the vacuum filling process.

(3) Main drain. A 3-inch globe type valve shall be located at the extreme bottom of the tank for use in gravity draining of the transformer.

(4) Oil sampling valve. Sampling the oil from the extreme bottom of the tank. The sampling valve shall be ball type, with a threaded cap or plug on the discharge end. This valve may be located at the main drain valve location.

(5) Lower filter connection. A 2-inch globe type valve shall be located at the extreme bottom of the tank.

(6) Tank air vents. Valves shall be provided for venting of the bushing adapters.

(7) Isolation valves. The following isolation valves shall be provided:

(a) Coolers. Valves shall be provided on the tank at the inlet and outlet of each cooler to permit removal without draining the oil from the tank.

(b) Oil circulating pumps. Isolation valves shall be provided on the inlet and outlet of each oil circulating pump.

(c) Rapid pressure rise relay. Isolating the rapid pressure rise relay.

2.6.6 Connections

All bolts, studs, machine screws, nuts, and tapped holes designed for customer connection shall be in accordance with ASME B1.1. Threads for sizes 1/4-inch to 1-inch, inclusive, shall be NC or UN series. The sizes and threads of all valves, pipe and fittings, conduit and fittings, tubing and fittings, and connecting equipment, shall be in accordance with ASME B1.20.1. Manufacturers' standard threads and construction may be used on small items which are integrally replaceable, except that threads for external connections to these items shall meet the above requirements.

2.6.7 Steel Pipe and Fittings

Steel pipe shall conform to ASTM A 53, Weight A, Class 2. Dimensions of terminating flanges shall conform to ASME B16.1 and ASME B16.24.

2.6.8 Grounding

Two ground pads shall be provided on the transformer for grounding the tank and base. The locations of the existing transformer ground pad connections are as indicated on Pennsylvania Transformer Company reference drawing 49464. The grounding provisions shall be in accordance with NEMA C57.12.10 (paragraph 5.5).

2.6.9 Personal Fall Arrest System

The top of the transformer tank shall be covered with a non-slip material, the same color as the tank walls. A fall protection system, consisting of removable safety posts and railing or wire rope, shall be provided. The post mounting system shall be designed so as to not collect water. The fall protection system shall be designed to meet the applicable provisions of 29 CFR 1926.502.

2.7 BASE

2.7.1 Steel Supporting Base

The transformer shall be furnished without wheels, and shall be provided with a structural steel supporting base designed for mounting as indicated in paragraph 2.1.6. The base shall be suitable for moving the transformer on rollers or skids in any direction when completely assembled and filled with oil, and suitable pulling eyes provided.

2.7.2 Jack Ports

The transformer base shall be provided with jack ports, bosses, or lugs, to permit jacking the complete transformer filled with oil per the requirements of NEMA C57.12.10 (paragraph 5.3.4), using the hydraulic jacks specified in paragraph 2.16.2, "Jacks". The design loads for jacking bosses or lugs shall be at least two times the actual loads to allow for possible unequal jacking forces.

2.7.3 Center of Gravity

The base shall be so designed that the center of gravity of the transformer, with or without oil as normally prepared for shipment, will not fall outside the base support members for a tilt of the base of 15 degrees from the horizontal.

2.8 ACCESSORIES

2.8.1 General

Dials, indicators, and gages installed on the transformer shall be mounted on the side of the transformer with the control cabinet at a height of approximately 60 inches above the base of the transformer, unless otherwise indicated, and arranged for convenient reading standing at the level of the base. The following accessory devices shall be furnished, and shall be included in the price for the transformer. Accessories shall be provided per the requirements of NEMA C57.12.10 (paragraph 5), unless otherwise indicated.

2.8.2 Liquid Level Indicator

A magnetic-type liquid level indicator equipped with a circuit-closing low-level alarm contact suitable for use with an ungrounded 125 Vdc circuit. The dial shall be marked to show the 25 degrees-C oil level and the maximum and minimum oil levels.

2.8.3 Liquid Temperature Indicator

A dial-type indicating thermometer (liquid temperature indicator) with its sensing element located in the path of the hottest oil. The thermometer dials shall cover a range of 0 to 120 degrees Celsius, and shall be equipped with an adjustable circuit-closing alarm contact suitable for use with an ungrounded 125 Vdc circuit.

2.8.4 Winding Temperature Indicators

2.8.4.1 General

One single-phase winding temperature indicator (WTI), with associated equipment, for use in remote indicating and recording or logging of the temperatures of the transformer phase windings, and for switching in the cooling control circuits shall be provided. The WTI equipment shall be responsive to the current in the low-voltage phase winding and to the top oil temperature, shall reflect the approximate hot-spot temperature of each winding, and shall be provided with a means of calibration. The WTI equipment shall include the following:

(1) A current transformer installed in the low-voltage windings, supplying current proportional to the load.

(2) A closed thermowell located inside the transformer case, located in the path of the hottest oil near the top of the tank.

(3) A heating coil in the thermowell energized by the current transformer.

(4) A sensing element located in the thermowell for operation of a dial indicator.

(5) A resistance temperature detector (RTD) in the thermowell for remote indication of winding temperature.

(6) All necessary wiring and capillary tubing.

2.8.4.2 Dial Indicators and Switches

The WTI shall have four electrically-independent, self-resetting contacts suitable for use on 125 V ungrounded dc circuits. The contacts shall operate to provide stages of cooling, annunciation, and control actions as indicated in paragraph 2.14, "COOLING EQUIPMENT". The indicator shall be mounted to allow resetting of the temperature switches without the use of steps or ladders.

2.8.4.3 Resistance Temperature Detectors

The WTI equipment shall include a copper three-wire RTD, with drain shield, having a resistance of 10-ohms plus-or-minus 0.2 percent with a temperature coefficient of 0.003855 plus-or-minus 0.000019 ohms/ohm-C at 25 degrees Celsius. The RTD will be used with existing temperature recording located in the powerhouse control room switchboard.

2.8.4.4 Leads

The leads from the WTI equipment shall be brought out through the transformer tank in watertight and oil-tight conduit fittings. All leads from the WTI equipment shall terminate in the transformer control cabinet.

2.8.5 Rapid Pressure Rise Relay

The transformer shall be provided with a relay to detect a sudden rise in oil or gas pressure in the transformer tank, designed to operate on rate of pressure change. The relay shall be insensitive to pressure pulses caused by electrical disturbances such as magnetizing inrush currents or mechanical shocks, but highly sensitive to small arcs which would not ordinarily cause a pressure relief device to operate. Connection to the transformer oil space shall be made through an approved valve. The relay shall have at least one set of 'Form C' contacts suitable for use on a 125 Vdc ungrounded circuit. A seal in relay designed for use with the rapid pressure rise relay, and suitable for service on a 125V ungrounded DC source shall be provided with the rapid pressure rise relay for use in latching the output relay for initiating a transformer trip. Means shall be provided to manually actuate the sensing mechanism of the relay without exposing the oil to air or gas, draining any oil from the transformer, or injecting any gas or liquid into the oil system.

2.8.6 Pressure Relief Device

2.8.6.1 General

The transformer tank shall be provided with a self resetting, mechanical-type high-flow pressure relief device to automatically relieve internal pressure and to protect the tank against rupture due to arcing below the surface of the oil. The relief device shall be capable of withstanding full vacuum without rupture or loss of accuracy. This device shall be constructed to minimize oil discharge during operation, and to exclude air and water after it opens. It shall be mounted over the main tank at or above the normal oil level in the tank. It shall be equipped with a visual indicator and an alarm contact suitable for operation on a 125 Vdc ungrounded circuit. The pressure relief device shall be a Qualitrol XPRD, or approved equal.

2.8.6.2 Oil Discharge Piping

Oil discharge piping shall be provided for directing the oil discharged from the pressure relief device to the base of the transformer tank. The oil discharge piping outlet shall be positioned approximately 24-inches above the base of the transformer, and be provided with a screen to discourage entry by animals, birds, and insects. The design of the oil discharge piping, including screen and inspection cover details, shall be included in the manufacturer's shop drawings.

2.8.7 Oil Flow Indicators and Switches

One magnetically coupled oil flow indicator with flow switch and low-flow alarm contacts shall be installed in the oil piping for each oil circulating pump. Alarm contacts shall be provided to indicate failure of the oil pump when the cooling equipment is energized. A time delay shall be provided to prevent operation of the alarm during pump starting. The oil flow switches shall have single-pole, double-throw contacts suitable for 125 Vdc ungrounded operation.

2.8.8 Contacts and Devices

The contacts of all relays, gages, and thermometers shall be insulated from ground and shall be of a positive snap-action type. Separate alarm relay devices may be furnished if desired. Alarm contacts shall be suitable for operation on 125 Vdc ungrounded circuits and rated 0.5 amperes (resistive) at 125 Vdc.

2.9 BUSHINGS

2.9.1 General Bushing Requirements

The transformer shall have one high-voltage, two low-voltage, and one neutral leads brought out from the tank through bushings as specified below. Bushings of the same voltage and current rating shall be interchangeable and, as applicable, except for the core ground bushing (see paragraph 2.3, "CORE"), conform to IEEE C57.19.00 and IEEE C57.19.01. All bushings shall meet the following requirements:

(1) Bushings shall be of recent manufacture and shall be of a type and style currently manufactured by the bushing manufacturer and shall be dimensionally interchangeable with current models of at least one United States manufacturer.

(2) Bushings shall be designed for outdoor service.

(3) The porcelain used in the bushings shall be manufactured by the wet process and shall be homogeneous, free from laminations, cavities or other flaws affecting its mechanical strength or dielectric quality, and shall be well vitrified, tough and impervious to moisture. The glazing of the porcelain parts shall be free from imperfections, such as blisters and burns. The exterior porcelain shell above the mounting flange shall be light gray in color.

(4) Bushings shall be so designed that there will be no stressing of any parts due to temperature changes, and adequate means shall be provided to accommodate conductor expansion.

(5) Bushings shall be gastight and oiltight, and shall seal gastight and oiltight on the transformer tank as applicable.

(6) The power factor of each bushing shall meet the requirements of IEEE C57.19.01 (2000), Table 10 as applicable.

2.9.2 High-Voltage and High-Voltage Neutral Bushings

The high-voltage and neutral bushings provided shall meet the requirements of paragraph 2.10.1, shall be designed to withstand the standard withstand test voltages as indicated in Table 1 of IEEE C57.19.01 (2000), and shall be tested in accordance with paragraph 3.2.3, "Bushing Tests". High-voltage and neutral bushings shall be of the condenser type, oil impregnated and oil-filled, and shall be provided with a suitable oil level gage or indicator and an oil drain. The seal shall be maintained by compression spring assemblies. The exterior porcelain shell shall preferably be manufactured in one piece, but may be of the two-module or three-module type construction that provides an oil tight enclosure for the core. If modules are provided, they shall be fitted with suitable oil-proof gaskets and shall

be held in compression by concentric spring loading. The power factor test facility on high-voltage bushings shall be provided, and shall be suitable for use with a bushing potential device. The high-voltage and neutral bushings shall be rated as follows:

2.9.2.1 High-Voltage Bushings

(1) Insulation class, kV: 230

(2) BIL rating, kV: 900

(3) Minimum current rating, Amperes: 400

(4) Creepage distance: Light contamination

2.9.2.2 High-Voltage Neutral Bushing

(1) Insulation class, kV: 34.5

(2) BIL rating, kV: 200

(3) Minimum current rating, Amperes: 400

(4) Creepage distance: Light contamination

2.9.3 Low-Voltage Bushings

Low-voltage bushings shall meet the requirements of paragraph 2.10.1 and IEEE C57.19.01 (1991), and shall be tested in accordance with paragraph 3.2.3, "Bushing Tests". They shall be of the oil-impregnated condenser type, the exterior porcelain shell above the mounting flange shall be formed in one piece, and they shall be designed for vertical mounting. Viton gaskets shall be used for the installation of all low-voltage bushings. The low-voltage bushings shall be rated as follows:

(1) Insulation class, kV: 15

(2) BIL rating, kV: 110

(3) Minimum current rating, Amperes: 3,000

(4) Thermal rating, degrees Celsius temperature rise: 125

2.10 BUSHING-TYPE CURRENT TRANSFORMERS

Two 600:5 multi-ratio bushing-type current transformers for relaying service shall be furnished for each transformer high-voltage bushing. All bushing-type current transformers shall conform to the requirements of IEEE C57.13 and NEMA SG 4, and shall have a minimum ANSI relaying accuracy classification of C400. The continuous thermal rating factor shall be 1.33, based upon a 30 degree Celsius average ambient air temperature. No current transformers are required for the low-voltage or high-voltage neutral bushings, except as may be required for the winding temperature indicating equipment.

2.11 LOW-VOLTAGE BUSHING THROATS

The transformer shall be provided with a flanged throat surrounding the low-voltage winding bushings, designed to bolt to the exiting isolated-phase bus housing enclosure. The elevation and location of the bushing throats and flanged bolted connections shall match the elevation and location of the existing isolated-phase bus housing enclosure. The dimensions and physical location of the existing isolated-phase buswork and low-voltage bushing throat flange are as indicated on the reference drawings. The details of the flanges and bolted connections shall be provided, and included on the manufacturer's shop drawings.

2.12 OIL

2.12.1 Quantity and Transformer Oil Certification

The Contractor shall furnish all oil required to fill the transformer and oil filled bushings to the proper operating levels as well as the oil required for factory tests. Prior to shipment of the transformer, Transformer Oil Certification shall be submitted stating that the oil furnished for placing the transformer in service will meet the requirements specified below.

2.12.2 Type of Oil

The grade of insulating oil furnished shall be produced from a predominately naphthenic base crude petroleum, shall be new, and shall be specifically prepared and refined for use in electrical equipment as an insulating and cooling medium. Except for the oxidation inhibitor, the insulating oil shall be free from additives of every kind, either natural or synthetic.

2.12.3 Chemical, Physical and Electrical Characteristics

The insulating oil provided shall be tested in accordance with, and shall meet the test requirements of, ASTM D 3487, Table 1, Type II prior to shipment. In addition to the requirements listed in ASTM D 3487 Table 1, the insulating oil for the transformer and bushings shall contain no Polychlorinated Biphenyls (PCBs) as tested in accordance with ASTM D 4059, and the water content shall not exceed 20 parts-per-million (ppm) as tested in accordance with ASTM D 1533. The Government, at point of delivery, may draw samples in accordance with ASTM sampling standards, for testing to determine whether the oil meets the specifications. Oil so tested and failing to meet the requirements will be removed and replaced by, and at the expense of, the Contractor.

2.12.4 Sampling

Samples for testing shall be obtained as specified in ASTM D 923.

2.12.5 Testing

Chemical, physical, and electrical tests shall be conducted by the Contractor in accordance with the test methods listed in ASTM D 3487, Table 1. Five certified copies of the test reports shall be submitted for approval prior to shipment of the oil.

2.13 OIL PRESERVATION SYSTEM

2.13.1 General

The oil preservation system for the transformer shall be of the inert-gas pressure type. The oil preservation system shall conform to the following requirements.

2.14.2 Inert-Gas for Transformer Processing

Cylinders of nitrogen gas necessary for shipping, installing, flushing and charging the transformer shall be furnished by the Contractor. The nitrogen and cylinders shall conform to IEEE C57.12.00 (paragraph 6.6.3). Freight on returnable cylinders shall be paid by the Contractor and shall be included in the price bid for the transformer.

2.13.3 Inert-Gas Pressure System

2.13.3.1 General

The inert-gas pressure system of oil preservation shall be complete for the transformer, shall be fully automatic in operation, and shall maintain an adequate supply of dry nitrogen gas under a positive internal pressure in the space between the top of the oil and the tank cover. The gas shall be supplied from a standard cylinder through a pressure regulator, which limits this pressure to not more than 2 psi for normal operating conditions. The nitrogen and cylinders shall conform to paragraph 6.6.3 of IEEE C57.12.00. Nitrogen gas cylinders shall be furnished with the transformer for use with the regulating equipment, and shall remain the property of the Government.

2.13.3.2 Pressure Regulating Equipment

The pressure regulator shall be of a make and type which has been in successful operation with transformers for a period of not less than five years. Alarm contacts suitable for use of a 125 Vdc ungrounded circuit shall be provided to indicate pressure below normal in the transformer tank and at the nitrogen cylinder. A relief valve shall be supplied to relieve automatically any internal pressure which may develop in excess of 5 psi. All valves shall be of an approved packless type.

2.13.3.3 Cabinet

A weatherproof steel cabinet containing the gas cylinder and pressure regulating equipment shall be mounted on the transformer tank, at a height such that the replacement nitrogen cylinders do not have to be lifted into place during maintenance. Alarm contacts shall be wired to terminal blocks within the cabinet. All fittings and tubing for nitrogen connections between the cabinet and the transformer tank shall be furnished with the transformer.

2.14 COOLING EQUIPMENT

2.14.1 General

The transformer shall have forced-oil, forced-air (OFAF) cooling equipment of sufficient capacity to permit continuous operation of the transformer at rated load without exceeding the allowable temperature rise. The cooling

equipment shall also be adequate to provide continuous operation at 70 percent rated load with one-half of the coolers out of service without exceeding the allowable temperature rise. The cooling equipment shall be provided in two separate cooling groups, which shall be mounted externally on the transformer tank on the high-voltage side of the transformer, as indicated on the contract drawings. Each cooling group shall include one or more oil-to-air heat exchanger, at least one oil circulating pump, and adequate forced-air equipment. The coolers shall be located on the tank so as to insure uniform circulation of the oil through the transformer windings. Valves in the oil inlet and outlet connections, and provisions for venting and draining, shall be provided on each cooler to permit the removal of any cooler without taking the transformer out of service.

2.14.2 Oil Circulating Pumps

The oil circulating pumps and motors shall be designed to deliver the required amount of oil under the most adverse conditions, and the motor shall be of adequate size to drive the pumps continuously under such conditions without exceeding their kilowatt rating or rated temperature rise. Each motor shall be provided with thermal overload protection. Each pump shall be designed and connected so that it may be readily removed for repairs or replacement without taking the transformer out of service. Each pump and motor shall be completely enclosed so that both stator and rotor windings are immersed in oil and the bearings continuously lubricated. The pumps shall be of the centrifugal type, with the shape and speed of the impellers designed to minimize the formation of gas bubbles. Pump casing, motor enclosure and impeller of each pump shall be constructed of heavy-duty class 30 cast iron. Minimum rated operating temperature shall be no more than -10°F. Maximum rated operating temperature shall be no less than 212°F. Impellers shall be designed to permit thermo-siphon flow when the pump is not operating to allow natural convection when the pump is shut-off.

2.14.3 Forced-Air Equipment

The forced-air equipment provided with each cooling unit shall include propeller type fans with guards and direct-connected motors, and a rigid housing with venturi openings, and louvers or baffles, if needed, to direct the air stream against the radiator and to prevent recirculation of discharged air. The propellers shall be balanced cast aluminum and shall provide adequate air delivery with low noise level. The fan motors shall be of splash-proof or totally-enclosed construction suitable for continuous service and shall have individual thermal overload protection. The fan motors shall be provided with antifriction bearings having a L10 rating of 40,000 hours minimum. The transformer forced-air equipment shall be designed to assure that the average sound level due to operation of the transformer and accessories with all fans in operation will not exceed 70dB at rated maximum load, as measured in accordance with IEEE C57.12.90.

2.14.4 Power Supply Equipment

The power supply for fan motors will be Government-furnished, 480 V, 3-wire, 3 phase, 60 Hz, as indicated on the contract drawings. One 3 pole, 600 V, molded case circuit breaker of proper current rating, and conforming to NEMA AB 3 shall be provided in the control cabinet for the supply circuit.

2.14.5 Cooling Control Equipment

2.14.5.1 General

All necessary protective and control equipment for the fan motors shall be furnished and installed in the transformer control cabinet. The control equipment shall be fully automatic, and designed to start and stop the fan motors as the transformer winding temperature requires. A "LEAD-LAG" selector switch shall be furnished to select which cooling group will run continuously, and which cooling group will be controlled automatically to provide the additional cooling required for full-rated capacity, as indicated. The controls shall be designed to de-energize the fans in the event of a transformer failure resulting in fire. Provision shall be made so that it will not be necessary to shut down the entire cooling equipment when removing any cooling group for repairs. Control equipment shall consist of molded-case air circuit breakers and contactors, as required, an "ON-OFF-AUTO" switch, and shall conform to NEMA ICS 2. Contactors shall be NEMA Size 1 minimum. Auxiliary relays, if required, shall have a contact rating designation of A600 or better. Additional circuit breakers for branch circuit protection of fan circuits shall be provided as required. Air circuit breakers shall be molded-case type, rated not less than 20A, conforming to NEMA AB 3. All cooling control equipment shall be designed per the applicable requirements of the NFPA 70.

2.14.5.2 Stages of Cooling

The control circuits shall provide for the following:

(1) The transformer shall be designed so that during energized, no-load conditions (e.g., for winding temperatures below 40 degrees C) the oil pumps and fans will not be in operation.

(2) The first set of winding temperature contacts (49T1) shall close automatically to start the first cooling group for cooling the transformer when operating at a temperature corresponding to a load slightly higher than the no-load, energized condition (e.g., for winding temperatures above 40 degrees C)

(3) The second set of winding temperature contacts (49T2) shall close automatically to start the second cooling group for cooling the transformer when operating at a temperature corresponding to 70 percent rated load or greater.

(4) The third set of winding temperature contacts (49T3) shall close automatically to provide an alarm indication that the maximum safe winding temperature for continuous operation has been reached.

(5) The fourth set of winding temperature contacts (49T4) shall close automatically at a winding temperature corresponding to unsafe operational conditions, and will be used for transformer shutdown.

2.14.6 Elapsed Time Meters

One hour indicated elapsed time meter shall be provided, as indicated, for each cooling group. The time meters shall be of the non-reset type, and have a 6-digit register with counter numbers at least 1/4-inch high. White numbers on black backgrounds shall provide hour indication with the last

digit in contrasting colors to indicate tenths of an hour. The enclosure shall be 3-1/2 inches square, and dust resistant. The operating voltage shall be 120 Vac.

2.15 TRANSFORMER CONTROL CABINET, WIRING, AND CONDUIT SYSTEMS

2.15.1 General

The transformer shall be provided with a control cabinet mounted in a readily accessible location, as indicated on the contract drawings. The location shall be such that the existing conduit for transformer external control circuits shown on the drawings can be used for the same purpose with this transformer. The control cabinet shall be of rugged weather-proof Type 304 stainless steel construction, of 14 gauge minimum thickness, with provision for locking. If electrically isolated from the transformer tank by vibration isolators, the control cabinet shall be provided with a grounding jumper to the transformer tank. The control cabinet enclosure shall remain unpainted, and "piano-hinges" will not be acceptable for cabinet doors. Devices mounted on the back of hinged panel doors that are not visible from the panel door fronts, shall be mounted such that the device mounting screws do not penetrate the panel doors. Device nameplates shall be made of engraved-aluminum with black lettering.

2.15.2 Wiring

2.15.2.1 General

All enclosures and devices shall be completely wired to designated terminal blocks for connection to external devices. The Contractor's standard cables and methods of cable terminations may be used for wiring and terminations performed at the factory, however, splices will not be permitted. Any wiring extending beyond the control cabinet and conduit entry box shall be terminated at 600 V terminal blocks with 30 A capacity. Special attention shall be given to terminal wiring arrangements on the terminal blocks to permit individual conductors of each external cable to be terminated on adjacent terminal points. The wire (terminal point) designations used on the Contractor's wiring diagrams may be according to the Contractor's standard practice; however, wire and cable designations for identification of external circuits shall correspond with Government's designations, as indicated on the contract drawings.

2.15.2.2 Control Panel and Shop Wiring

Wiring for factory assembled control panels or assemblies of electrical components on the transformer shall be of a cross-linked-thermosetting-polyethylene insulated type conforming to the requirements of NEMA WC 70 (paragraph 4.1.13). The insulation shall be moisture and heat resistant, suitable for conductor temperatures not exceeding 90 degrees-C normal operation, and shall also pass the Type A vertical flame test requirements of NEMA WC 70 (paragraph 6.8). All wires shall be single conductor stranded coated annealed copper, insulated for not less than 600-volt service. Conductors shall be Class B or Class C stranding, except hinge wires shall be Class K stranding. Hinge wires shall be used between stationary panels and swing doors, and shall be formed in wire loops that will provide rotation around the longitudinal axis of the conductors. Type SIS wire may be used in the control panel, however, Type SIS wire shall not be used in conduit runs unless specifically approved for such uses. Conductor size

shall be not less than No. 12 AWG, except for current transformer secondary leads, which shall not be less than No. 10 AWG. All connections to device terminal studs or blocks shall be made with pressure-indented terminals. The completed installation shall conform to all requirements of the National Electrical Code (NFPA 70).

2.15.2.3 Special Control and Signal Cable

The cable shall conform to the applicable requirements of NEMA WC 5. Parts, sections, paragraphs, tables specified hereinafter will refer to NEMA WC 5. Conductors shall be tinned copper with Class B or Class C stranding conforming to Part 2. Conductors shall be insulated for 600-volts with polyethylene insulation conforming to the requirements of Table 3-2 and paragraph 3.9. Overall shielding shall be provided by aluminum-Mylar tape to provide 100 percent coverage. A drain wire in intimate contact with the shield shall be provided. Overall shields shall be provided for multiple-shielded pair or triplet cables. A jacket shall also be provided over shielded pairs or triplets of multiple-grouped cables in accordance with paragraph 4.3.1 and Table 4-4 for equivalent diameter of single conductor cables. Individual conductors of shielded and jacketed twisted pairs and triplets and jackets over paired or tripled conductors shall be color coded in accordance with paragraph 5.5.2.1 and Table 5-1. Polyvinyl chlorine (PVC) insulation or jacketing will not be accepted.

2.15.3 Conduit Systems

All wiring from the transformer devices and accessories listed below shall be run in rigid galvanized conduit conforming to NEMA C80.1, zinc coated (galvanized) both inside and outside. Wiring shall be connected to terminal blocks in the cabinet, with the exception that short lengths of cables suitable for outdoor use will be permitted between individual device terminals and nearby connection boxes. All conduit runs installed by the Contractor shall be terminated at devices or connection boxes and at the terminal cabinet in standard pipe-threaded couplings or nipples integral with or welded to the device or cabinet. Similar pipe-threaded connections shall be provided on the terminal cabinet for attaching incoming conduit. Other conduit connections shall be made with cast metal boxes and outlet fittings having threaded outlets and gasketed covers. The conduit systems shall be electrically continuous and all threaded joints shall have the threads coated with an approved conductive joint compound. No running threads on conduit will be permitted. Fittings for rigid metal conduit shall conform to NEMA FB 1. Cast aluminum boxes with cast covers shall be used conforming to the requirements of UL 514B and UL 886. Short lengths of watertight flexible conduit may be used for connections to auxiliary devices, subject to approval. Flexible conduit shall conform to UL 1, shall have a hot dipped galvanized steel core, copper ground wire and a waterproof extruded PVC cover. Fittings for conduit shall be threaded and conform to NEMA FB 1, UL 467, and UL 514B, and shall be constructed to ensure positive grounding.

2.15.4 Terminal Blocks

2.15.4.1 General

Except for the diode and rail terminal blocks, terminal blocks for control signal and current transformer secondaries shall be removable and of binding, fillister or washer-head screw type, or stud type with contact and

locking nuts. Each terminal shall be not less than No. 10 in size, having length and space for connecting at least two No. 12 AWG conductors to each terminal. Terminal blocks shall be provided to terminate all external cables and shall contain at least four spare terminals or 10 percent, whichever is greater. White or other light colored marking strips, shall be provided for circuit designation. Each connected terminal of each block shall have the circuit designation or wire number placed on the marking strip with permanent marking fluid. Two reversible or spare marking strips shall be furnished with each block.

(1) Control Signal Type. All terminal blocks for control wiring, shall be sliding link disconnect molded or fabricated type with barriers, rated not less than 600 volts with 30 ampere capacity.

(2) Current Transformer Secondaries Type. Short circuiting type terminal blocks shall be furnished for all current transformer secondary leads as shown in the contract drawings and shall have provisions for short-circuiting together all leads from each current transformer without opening any circuit. Short-circuiting the terminals of only one current transformer shall not short-circuit the terminals of any other current transformer.

2.15.5 Lighting, Convenience Receptacle, and Cabinet Heater

One 120 V lamp with 750 lumens minimum output, complete with housing, wiring, and switch shall be provided in the control cabinet for illumination. If an incandescent lamp is provided, the lamp shall be rated 75W, be industrial grade, and the switch shall be 20 A, T rated. The lamp shall be placed or shielded so that direct light will be thrown on the control panel only. A 125 V, 3 wire, 20 A, GFCI type receptacle, shall be provided in the control cabinet. A 120 V thermostatically controlled electric space heater of adequate rating shall be provided in the cabinet to prevent condensation when the outside temperature is as low as -20 degrees Celsius.

2.15.6 Auxiliary and Interposing Relays

Auxiliary and interposing relays, with the exception of time delay relays, shall be of the self-reset type and shall be provided with convertible contacts. They shall be provided where device contact ratings, which interface with external powerhouse equipment, do not meet the contract requirements of this paragraph. Relay coils and contacts shall be suitable for continuous operation in 125 Vdc or 120 Vac circuits, as required. Contacts shall have a 10 A continuous current rating. The single-contact inductive load interrupting capacity shall be not less than 1.0 A for 125 Vdc, or 6 A for 120 Vac. Relays used in 125 Vdc circuits shall be rated for operation between 90 and 140 Vdc. Relay coils used in 125 Vdc circuits shall be designed to operate at 140 Vdc continuously. Relays shall meet the requirements of NEMA ICS 2, designation A 600.

2.15.7 Control and Instrument Switches

Control and instrument switches shall be of the rotary switchboard type with handles on the front and the operating mechanisms on the rear of the panels. Each switch shall be provided with ample contact stages including spare contacts where indicated to perform the functions of the control system. Contacts shall be self-aligning and shall operate with a wiping action. A

positive means of maintaining high pressure on closed contacts shall be provided. Compression springs or pivoted joints shall not be depended upon to carry current. The covers or plates on the switches shall be readily removable for inspection of contacts. The switches shall be suitable for operation on 600-volt ac or 250-volt dc circuits, shall be capable of satisfactorily withstanding a life test of at least 10,000 operations at rated current, and shall be capable of continuously carrying 20 amperes without exceeding a temperature rise of more than 30 degrees C above ambient. The single-breaking inductive load interrupting rating shall be not less than 1.5 A for 125 Vdc, or 10 A for 120 Vac. Each switch shall be provided with an escutcheon clearly marked to show each operating position. The switch identifications shall be engraved on the escutcheon plates and on separate nameplates.

2.16 SLINGS, JACKS AND TOOLS

The following equipment for assembling, disassembling, and moving each transformer shall be furnished by the Contractor. The equipment shall remain the Foster Dam powerhouse, and shall remain the property of the Government after completion of the work:

2.16.1 Slings

Slings and clevises or other secure fastenings, for use with a mobile crane in lifting the transformer fully assembled and filled with oil, shall be provided. The wire rope slings shall have a safety factor of five to the breaking strength.

2.16.2 Jacks

Not less than four heavy duty hydraulic jacks suitable and adequate to safely lift the complete transformer filled with oil shall be provided. Each jack shall be equipped with a pressure gage and a pressure relief device.

2.16.3 Tools

A complete set of any special tools, wrenches, or equipment that may be necessary or convenient for assembling, disassembling and moving the transformer, and also any other accessories and/or appliances which are necessary for satisfactory operation or servicing thereof and are not specified herein, shall be provided.

2.17 SPARE PARTS

All spare parts shall be duplicates of the original parts furnished and interchangeable therewith. The following spare parts for the transformer shall be furnished:

(1) Two complete sets of all gaskets needed to seal all openings into the transformer tank at the cover, manholes, handholes, openings for accessory devices, openings for high, low, and neutral bushings, and pipe connections for radiators. One complete gasket set to be used for the cover when untanking is performed, which will ensure that no weldment material will enter the transformer tank during the welding process.

(2) One transformer cooling fan, complete with motor.

(3) One transformer oil pump, complete with motor.

2.18 NAMEPLATES

2.18.1 Transformer Nameplate

The transformer shall be provided with a cast bronze or stainless steel nameplate conforming to the requirements of IEEE C57.12.00, Table 10. In addition to the requirements of Table 10, the nameplate shall also include the following: date of manufacture, manufacturing plant location and address, Government contract number, the amount of pressure and vacuum the tank will withstand, and the transformer X/R ratio. The nameplate or an adjacent nameplate shall also include the following information for each current transformer furnished: the accuracy class, the primary and all secondary ampere ratings, and identification of the terminals to which the current rating applies. The following transformer identification shall be provided:

(1) The core and coil assembly structural framework shall be stamped with the serial number of the transformer.

(2) The transformer serial number shall be stamped into the tank immediately adjacent to the transformer nameplate with characters approximately 1/2 inch high.

(3) The location of the centers of gravity (c.g.) of the completely assembled transformer filled with oil, and the heaviest piece for shipment without oil, shall be permanently marked on two adjacent sides of the transformer tank and shall be appropriately identified "c.g. complete" and "c.g. for shipment".

(4) A diagram plate shall be provided to show the various sling and lift positions required for proper lifting of the core and coil assembly and for lifting or jacking the completely assembled transformer, with and without oil. It shall also indicate the untanking height and whether the transformer may be lifted when filled with oil.

2.18.2 Device Nameplates

Each item of equipment mounted in the transformer control cabinet shall be provided with an engraved nameplate. Nameplates shall be made of anodized aluminum approximately 1/8 inch thick or stainless steel, engraved and provided with black lettering. Each nameplate shall be fastened to the panels in proper locations, with either corrosion-resistant black finished round head screws, or on screw posts with corrosion-resistant black finished nuts.

PART 3 EXECUTION

3.1 ELECTRIC WELDING<

3.1.1 Preparation for Welding

Members to be joined by welding shall be cut accurately to size and, where required, shall be rolled or pressed to the proper curvature and dimensions. The edges of the members shall be sheared, flame cut, or machined to suit the required type of welding and to allow thorough penetration. The cut surface shall expose sound metal free from laminations, surface defects caused by shearing or flame cutting operations, or other injurious defects. The surfaces of plates to be welded shall be free from rust, grease, and other foreign matter for a distance of at least 1/2-inch back from the edge of the weld.

3.1.2 Welding

All welding shall be performed by the electric arc method, by a process which will exclude the atmosphere from the molten metal and, where practicable, under procedure control using automatic machines. After being deposited, welds shall be cleaned of slag by shot blasting, unless otherwise approved, and shall show uniform sections, smoothness of weld metal, feather edges without overlap, and freedom from porosity and clinkers. Visual inspection at the edges and ends of welds shall indicate good fusion with the base metal. Particular care shall be taken in aligning and separating the edges of members to be joined by butt-welding so that complete penetration and fusion at the bottom of the joint will be assured. All pinholes, cracks, and other defects shall be repaired by chipping or grinding to sound metal, and rewelding. Where fillet welds are used, the members shall fit closely and shall be held together during welding. The welding rods used for manual welding shall be of the heavily coated type and shall be suitable for the position in which the welding is performed.

3.1.3 Welding Process

The Contractor shall have established and recorded a specification of the welding process that he proposes to use and, if required, shall submit a copy of such process specification, together with certified copies of reports of results of tests made in accordance therewith. The qualification of the welding process shall be in accordance with the requirements of AWS B2.1, and the minimum requirements of the tests shall be as stated in the appendix thereto.

3.2 FACTORY ASSEMBLY AND TESTS

3.2.1 General

The transformer shall be completely assembled and adjusted at the factory, and shall be subjected to the manufacturer's routine shop tests and also other tests as specified below. All parts shall be properly marked and identified for ease of assembly in the field. The Contracting Officer's Representative (COR) shall witness all tests required herein unless waived in writing, and no equipment shall be shipped until it has been released for shipment by the COR. No power transformer factory acceptance tests shall be performed until all submittals required up to the point of factory testing have been reviewed by the Government and given an Action Code 'A' or 'B'

approval. The Government shall be provided notification of the date of factory tests sufficiently in advance of the scheduled test date so that arrangements can be made for the COR to be present at the tests. The factory tests, including test equipment, test methods, measurements, and computations, shall be in accordance with the applicable requirements of IEEE C57.12.00, IEEE C57.12.80 and IEEE C57.12.90, unless otherwise specified, and the Factory Test Procedures shall be submitted for approval. All routine tests required by the referenced standards shall be made and reported whether specifically required by these specifications or not. Except where otherwise specified in the Standards, all measurements and tests involving alternating voltage shall be made with 60 Hz sine wave voltage. The Contractor shall furnish five certified copies of all Transformer Factory Acceptance Test Reports, including oscillograms and complete data on all tests. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The cost of performing all tests shall be borne by the Contractor and shall be included in the unit price for item 1002 of the Bid Schedule.

3.2.2 Power Transformer Tests

All routine and design power transformer tests as indicated in IEEE C57.12.00, Table 19 shall be performed. In addition to these tests, the following tests and specific test requirements shall be performed:

3.2.2.1 Transformer Tank

The transformer tank and cooler assembly shall be tested for leaks when filled with oil. The test pressure shall be less than that of the pressure relief setting of the pressure relief device, subject to approval, and shall be maintained for at least 4 hours. The tank wall surfaces shall be checked for hot spots during the heat run tests. The tank wall hot-spot temperature rise shall not exceed 70 degrees-C while operating at 100 percent of its rating.

3.2.2.2 Impulse Tests

Oscillograms shall be taken of surge voltages during all impulse tests and of neutral current during the full-wave impulse tests. The impulse tests shall be made by direct application without 60-Hz excitation. Lightning impulse tests shall be performed on neutral terminals. The oscillograph shall be adjusted to give the same deflection on reduced-voltage and full-voltage impulse waves to facilitate comparison of the oscillograms. Comparisons shall also be made of the consecutive chopped-wave impulse oscillograms. Oscillographic comparison traces shall be printed, and provided in the certified test report. Any deviation in voltage or neutral current wave shape between reduced-voltage and full-voltage full-wave tests, shall be explained to the satisfaction of the COR or it will be considered cause for rejection of the transformer.

3.2.2.3 Induced Voltage Test With Partial Discharge Measurements

(1) During the 7,200-cycle test, the corona level, excluding background noise, shall not exceed 250 microvolts at the full test voltage. Any variation in corona intensity before and after application of full 7,200-cycle test voltage shall be explained to the satisfaction of the Contracting Officer.

(2) It is recognized that sizable corona readings during tests are likely to occur from causes external to the transformer itself, such as corona in the high-voltage test circuit, noise from shop equipment, other tests, and radiation or induction pickup through air between the measuring circuit and the high-voltage test equipment. All reasonable precautions shall be taken to minimize such external interference, and the Contractor shall demonstrate that this corona is in no event internal to the transformer by sample tests showing the difference in characteristics between corona under oil and corona in air. It is entirely permissible to utilize special shielding or over insulated bushings to minimize the effects of bushing corona.

(3) During the one-hour test, the corona level shall not exceed 100 microvolts at the full test voltage.

(4) All records, meter readings, and data taken during the above described tests, together with a diagram of the circuit employed, shall be incorporated in the certified test report.

3.2.2.4 No-Load Tap Changer Test

The completely assembled no-load tap changer shall be subjected to ten complete tap changing cycles (end-tap to end-tap) to demonstrate that all linkages, contacts, and indicating mechanisms are properly assembled and aligned and free from excessive slack, deformation, or fragility.

3.2.2.5 Audible Sound Level Test

The transformer's sound level shall not exceed the value specified in paragraph 2.1.4, "Ratings and Electrical Characteristics". If the sound level exceeds the specified limit, the Contractor shall modify the transformer as required to reduce the sound level to the specified level, and the sound level test repeated. The abatement technique used to reduce the tested sound level to the guaranteed sound level shall be subject to approval of the Contracting Officer.

3.2.2.6 Leakage Reactance Measurement Test

The transformer shall have leakage reactance measurement tests performed between the high-voltage windings and the low-voltage windings, for use as baseline data for future testing. Voltage, current, and phase angle measurements shall be recorded, and the leakage reactance calculated. The proposed leakage reactance test equipment, setup, and test levels shall be included in the factory test procedures submittal.

3.2.2.7 Sweep Frequency Response Analysis Test

The transformer shall have a Sweep Frequency Response Analysis (SFRA) test performed, for use as baseline data for future testing. The equipment to be used for performance of this test shall be Doble Model M5100B, or approved equal. The proposed SFRA test equipment, setup, and test procedure shall be included in the factory test procedures submittal.

(1) Test Equipment. The excitation source for the SFRA test shall generate a sinusoidal waveform at a constant magnitude over a 20 Hz to 2 MHz frequency range, to allow for consistent measurement of the transfer function across the frequency range. Successive measurements

shall be logarithmically spaced at a maximum of 5 percent of the previous measurement, to assure a clear definition of the waveform shape across the frequency range. The test set shall be capable of measuring from 0 to -80 dB, or lower, over the frequency range. The test system should provide a 50 Ohm characteristic impedance for consistency between different test systems. Test leads shall consist of coaxial cables of the same length.

(2) Test Connections. All windings shall be tested as indicated below, for each tap position.

	Test 1	**Test 2**	*** Test 3**	**Test 4**
Single Phase	H1 - H2	X1 - X2	H1 - H2	H1 - X1

* Indicates short circuit test with X1 and X2 shorted together.

(3) Data Format. Data shall be viewable in Microsoft Excel format, and shall include:

(a) Frequency

(b) Magnitude

(c) Phase

(d) Tap positions for each test

(e) Previous tap position for neutral tap test

(f) Relevant nameplate data

(g) Test set information (make, model, calibration)

(4) Data Interpretation. SFRA testing produces traces which provides information related to the physical geometry of the test specimen. The factory SFRA tests performed on the transformer creates baseline data for use in future testing, and helps in recognizing obvious manufacturing defects, such as open circuits, short circuits and winding deformations.

3.2.2.8 Combustible Gas-In-Oil Analysis

Samples of the transformer insulating oil shall be taken, and combustible gas-in-oil analysis tests shall be performed as follows. Identity of samples and results of analyses shall be included in the certified test report.

(1) After oil-filling of the transformer, and prior to the performance of any transformer factory acceptance tests.

(2) Prior to the performance of temperature rise testing.

(3) After completion of all transformer factory acceptance tests.

3.2.3 Bushing Tests

Bushing tests shall be performed in accordance with IEEE C57.19.00, IEEE C57.19.01 (2000) for high-voltage and high-voltage neutral bushings, and IEEE C57.19.01 (1991) for low-voltage bushings. Any bushing that fails to pass all tests to which it is subjected will be rejected. The Contractor shall submit, without additional cost to the Government, five certified copies of all Bushing Test Reports.

3.2.3.1 Bushing Design Tests

Bushing design tests shall be performed on one bushing of each type provided in accordance with IEEE C57.19.00 (paragraph 7.2), unless these tests have previously been performed on bushings of the same manufacture, design, type, and rating as those being provided within 5 years of the date of this contract, in which case the requirements for repeating these design tests will be waived and certified copies of the test results of satisfactory tests of this kind shall be furnished to the Contracting Officer. If any bushing given the impulse tests fails to pass any of the tests, then all bushings of the same type and rating shall be subjected to the impulse tests at no additional cost to the Government.

3.2.3.2 Bushing Withstand Test Voltages

The bushings shall be tested per the applicable requirements of IEEE C57.19.01, Table 1.

3.2.3.3 Bushing Routine Tests

Each new bushing provided shall be subjected to the routine tests in accordance with IEEE C57.19.00 (paragraph 7.4).

3.2.3.4 Bushing Current Transformer Tests

Each bushing current transformer shall be given routine tests in accordance with IEEE C57.13 (paragraph 4.7.2), including a low frequency dielectric test of the secondary of 2,500 V to ground for one minute. Induced potential tests shall be made at the full required voltage and for the full required duration corresponding to the test source frequency. Each current transformer shall be checked for proper nameplate and polarity markings, and after installation on the power transformer it shall be given a polarity check and ammeter ratio check to ensure correct installation. The Contractor shall furnish, without additional cost to the Government, five certified copies of the following data:

(1) Typical excitation curves for each turn ratio.

(2) Typical ratio correction factor curves for each turn ratio.

(3) The resistance of the secondary winding at 75 degrees-C, including the approximate resistance of the secondary leads from the transformers to the terminal blocks in the terminal cabinet.

3.3 FACTORY CLEANING AND PAINTING

3.3.1 General

All interiors and exteriors of the tank, enclosures, cabinets, and other metal parts which are not galvanized or of corrosion resistant material and are exposed to oil or weather shall be thoroughly cleaned and painted. Cleaning shall be by degreasing and abrasive blasting or other means to remove all grease, scale, corrosion, and foreign substances.

3.3.2 Interior Surfaces

All interior surfaces of the main transformer tank shall be given at least one priming coat and one finish coat of oil-resistant paint or enamel. The interior color shall be white.

3.3.3 Exterior Surfaces

All exterior surfaces shall be given a primer and two finish coats of pigment paint in the factory. The paint shall be epoxy ANSI No. 70 gray color, applied over a properly prepared, primed surface. The dry film thickness of the primer shall be a minimum of 1.5 mils, and that of the epoxy a minimum of 3.5 mils. One gallon of paint, from the same batch used on the transformer, shall be supplied with the transformer for touching up. With prior approval of the Contracting Officer, other comparable paint types may be used.

3.3.4 Machined Surfaces

All machine finished or corrosion-resistant surfaces shall be remain unpainted, and be thoroughly cleaned, coated with a suitable, easily removed, corrosion resistant compound, and wrapped or otherwise protected from damage in shipment.

3.4 TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

The transformer equipment, accessories, and spare parts shall be prepared for shipment f.o.b. Foster Dam, inspected, moved into its final storage location, re-assembled, oil-filled, and tested per the requirements of SECTION 01600.

-- End of Section -

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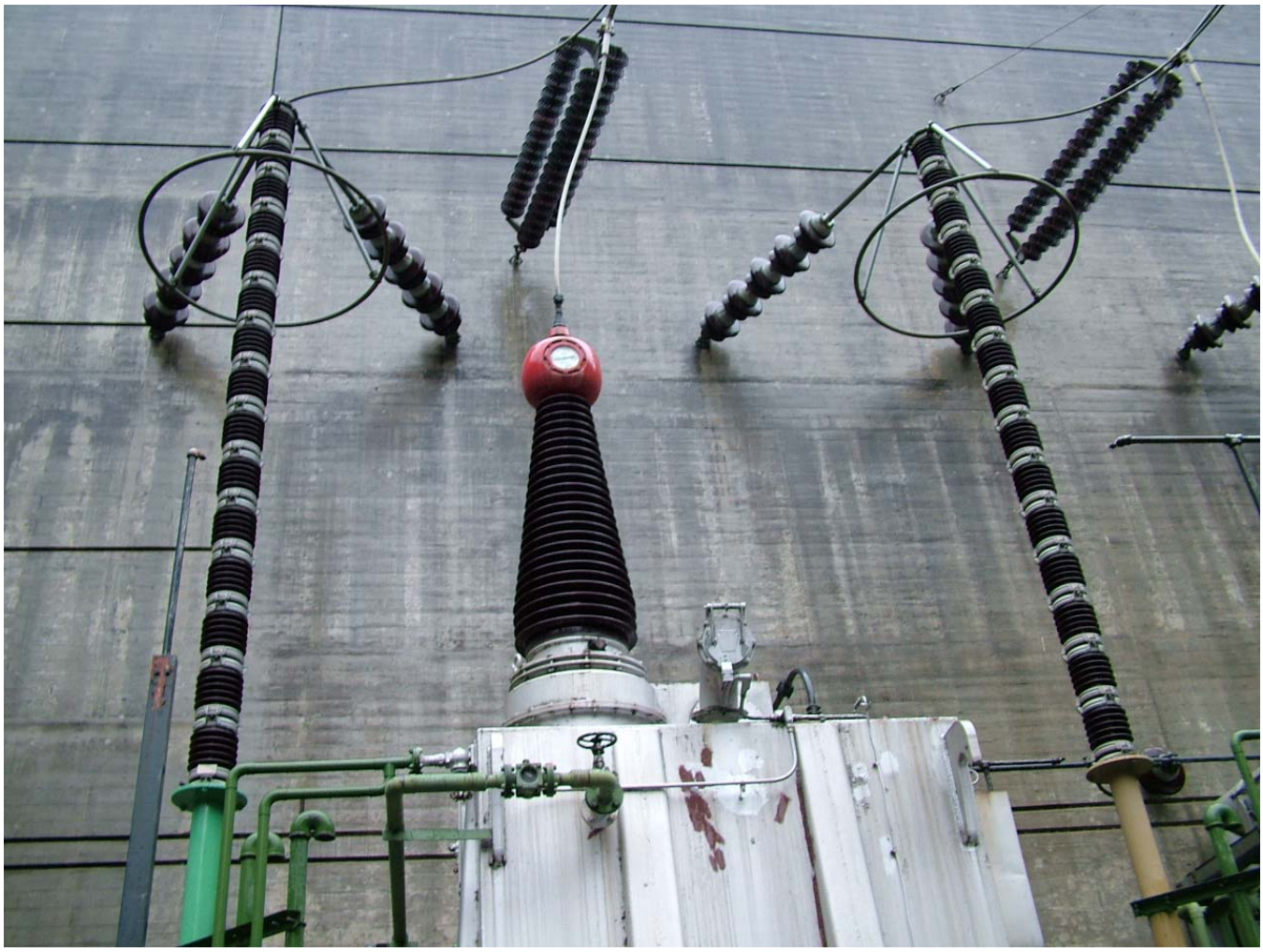
Existing Detroit Dam Transformer Deck

Typical Existing Detroit Dam Single-Phase Transformer

Typical Existing Detroit Dam Single-Phase Transformer

Typical 13.8kV Isolated-Phase Bus Connections to Transformer



Typical Existing Detroit Dam Single-Phase Transformer

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SECTION J2

LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

DWORSHAK DAM SPARE TRANSFORMER

TABLE OF CONTENTS

DOCUMENT No.	DESCRIPTION
J2-A	Drawing Index
J2-B	Section C2 (Technical Specifications)

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ATTACHMENT J2-A

DRAWING INDEX

Spare Transformer Supply,
Dworshak Dam and Reservoir
North Fork Clearwater River, Idaho

DRAWING NUMBER	SHEET NUMBER	TITLE	REVISION NUMBER	DATE
DWP-5.5-0-0/1	1	Project Location and Vicinity Maps		7 JAN 05
DWP-5.5-0-0/2	2	Index of Drawings		7 JAN 05
DWP-5.5-6-1A40/1	3	Transformer Layout		7 JAN 05
DWP-5.5-6-9F24/1	4	Transformer Control and Schematic Diagrams		7 JAN 05
DWP-5.5-6-9F24/2	5	Transformer Control Cabinet External Connections		7 JAN 05

REFERENCE DRAWINGS

Reference drawings provided show conditions at time of construction. These drawings are furnished for information only and the Government does not warrant that conditions will be exactly as shown. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation.

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV NO.	DATE
HAM598-01		Transformer, Class OA/FA, Shell Form, Outdoor, Single Phase	2	2-2-71
HAM598-02		Transformer, Class OA/FA, Shell Form, Outdoor, Single Phase	2	2-2-71
HAM598-04		OF/FA Transformer Control Schematic Wiring Diagram		7 JAN 05
HAM598-05		OA/FA Transformer Control Connection Wiring Diagram		7 JAN 05
DWP-1-6-1A5/3		500 kV Transformer		17 APR 69
DWP-1-4-4/50		Transformer Pads	D	31 JUL 75

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Attachment J2-B

SECTION C2

DESCRIPTIVE/SPECIFICATIONS/WORK STATEMENT

1.1 DESCRIPTION OF WORK

This section covers the technical specifications for the supply of equipment described in The Schedule, together with all accessories and spare parts specified therein. The work described within these specifications shall include, but not necessarily be limited to the following:

(1) Design, manufacture, and factory test one single phase generator step-up power transformer rated 121,500/162,000 kVA, 500 kV GrdY high-voltage, 13.8 kV - 13.8 kV low-voltage, Class ONAN/ONAF cooling, furnish slings, jacks and tools, and furnish spare parts. (SECTION 16277)

(2) Deliver the transformer f.o.b. destination, offload the transformer, movement of the transformer to the Dworshak Dam permanent storage location, assemble the transformer as required for long-term storage, oil fill the transformer, perform field tests, provide services of a manufacturer's erecting engineer, and provide training to Government personnel. (SECTION 01600)

(3) Perform work required to comply with site operations and safety and health provisions. (SECTION 01010)

(4) Perform work required to comply with environmental protection. (SECTION 01355)

1.2 SPECIFICATIONS

Technical specifications cover the detailed requirements for the equipment and services listed in the Schedule and below.

SECTION	TITLE
01010	CONTRACTOR'S SITE OPERATIONS
01270	MEASUREMENT AND PAYMENT
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1.3 DEFINITIONS

(1) Wherever in the specifications, or upon the drawings, the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription" of the Contracting Officer is intended, and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by" or "acceptable to" or "satisfactory to" the Contracting Officer unless otherwise expressly stated.

(2) Where "as shown", "as indicated", "as detailed", or words of like import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provided complete in place", that is, "furnished and installed". (FAR 52.236.21(b) and (c)).

(3) Wherever in these specifications or upon the drawings, the words "Contracting Officer" (CO) or "Contracting Officer's Representative" (COR) are used, it shall be understood to also mean "Government" unless otherwise expressly stated.

(4) Wherever in these specifications the acronym "GQAR" is used, it shall be understood to mean "Government Quality Assurance Representative", unless otherwise expressly stated.

(5) Wherever in these specifications the work "weekend(s)" is used, it shall be understood to mean "Saturday, Sunday, and Federal Holidays", unless otherwise expressly stated.

-- End of Document --

SECTION 01010

CONTRACTOR'S SITE OPERATIONS

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SECTION 01010

CONTRACTOR'S SITE OPERATIONS

PART 1 GENERAL

1.1 GENERAL INFORMATION

This SECTION covers the general requirements applicable to specific Contractor's operations or equipment for work performed on site.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by basic definition only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

AASHTO	American Association of State Highway Transportation Officials
DOT	Manual on Uniform Traffic Control Devices For Streets and Highways

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Loading Plan; G, AO

A minimum of 30 calendar days prior to on-site work (see paragraph 1.14, "CRANES AND HEAVY EQUIPMENT").

2. Contractor's Work Supervisor(s) Qualifications; G, AO

Qualifications and identification of Contractor's agent(s), a minimum of 10 calendar days prior to the start of site work (see paragraph 1.18.1, "Contractor's Work Supervisor(s)").

4. Scaffolding, Ladder, Stairway or Other Access Schemes; G, AO

A minimum of 30 calendar days prior to their installation and use (see paragraph 1.24, "SCAFFOLDING").

5. Site Work Schedule; G, AO

Site work schedule, a minimum of 10 calendar days prior to the start of site work and updated weekly (see paragraph 1.26, "SITE WORK SCHEDULE").

1.4 PROJECT SECURITY

1.4.1 General

The project site is a secured area and access onto the project is restricted. The security measures affect all of the Contractor's vehicles and personnel. There will be delays when entering projects due to locked gates, vehicle inspections, and personnel checks. Inspections and checks may include inspection of tool boxes, brief cases, lunch boxes, and other containers.

1.4.2 Vehicle Access

Project access roads are secured with locked gates. All vehicles that pass thru the locked gates will be subject to being searched. No privately owned vehicles (POV's) will be allowed thru locked gates. Only Contractor's work vehicles and equipment that are essential to the conduct of the work will be allowed in the work areas. All Contractor vehicles shall display suitable permanent or temporary identification.

1. 4.3 Identification of Employees

The Contractor shall be responsible for furnishing identification and other information to the project POC for each employee prior to the employee’s work on the project site, and for requiring each employee on the project site to display identification at all times. Identification shall include photo identification, company name, and the individual’s name and company identification number as a minimum. Badges will be laminated plastic type. All prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon the release of the employee. If required by the Contracting Officer employees will be photographed by the Government. Employees who fail to submit to photographing will not be allowed on the project site.

1.4.4 Delivery of Equipment

Delivery of equipment and materials to the project site shall arrive during the normal working hours of the project maintenance crews described in paragraph WORK SCHEDULES. To the maximum extent possible deliveries shall arrive on the same side of the river as the Contractor's work area. Delivery vehicles will not be allowed to cross the river over the dam. Delivery vehicles arriving on the opposite side of the river as the work area shall be unloaded outside the locked gate, equipment shall be loaded onto Contractor's vehicles, and Contractor's vehicles will then be allowed to cross the dam to the work area.

1.5 NTO USED

1.6 NOT USED

1.7 PLANT AND EQUIPMENT LIST

A complete list of all plant and equipment, exclusive of shop equipment, to be used on the project shall be furnished at the Contractor/Government Coordination Meeting. The lists shall include rented equipment as well as lease-purchase or sale-leaseback equipment, dates equipment is assigned to or removed from the project, dates deadlined for repairs and returned for use, and adequate identification or description of each item of equipment including manufacturer's name (abbreviated), model number, manufacturer's serial number, year of manufacture, and Contractor's assigned serial or record number.

1.8 EXISTING FACILITIES

1.8.1 Sanitation Facilities

Use of the project restroom facilities will not be made available to the Contractor. The Contractor shall furnish his own sanitation facilities in accordance with EM 385-1-1. The sanitation facilities shall be located outside the powerhouse at locations coordinated and approved by the GQAR. The Contractor shall provide freeze protection during the months October through March to prevent any spillage.

1.8.2 Elevators

Use of elevators shall be coordinated with the GQAR. All Powerhouse elevators are used for Government personnel and equipment transport, and no freight elevators exist at the Dworshak Dam powerhouse. The elevators shall not be used to move equipment and material that interferes with personnel use. Any Contractor caused abuse or damage of the Powerhouse elevators will result in denial of continued use, and any needed repairs will be charged to the Contractor.

1.9 UTILITIES

1.9.1 Government Furnished Utilities

All utilities that are required for use in performance of the work under this contract shall be Contractor-furnished except as noted below:

(1) Water. All reasonable amounts of non-potable water will be made available from existing outlets. Contractor shall freeze proof all outdoor water systems being used in his operations during the winter months; October through March.

(2) Electricity. Electric power in the area may be obtained from the following existing sources :

(a) 120-volt, 1-phase, 20-amperes

(b) 480-volt, 3-phase 30-amperes

1.9.2 Temporary Utility Connections

All utilities provided by the Government shall be at no cost. Care shall be exercised in conserving all Government-furnished utilities. Extension cords shall be Contractor-furnished. All temporary utility connections shall be subject to approval. The location of all power lines and all temporary connections for electricity shall be coordinated with the GQAR. All temporary circuits and devices shall be provided, connected, and maintained and removed prior to final acceptance. Ground fault protection for all circuits used shall be Contractor-furnished.

1.9.3 Telephone

The Contractor shall be responsible for furnishing all telephone service needed by him on the job site. The Project telephone system will not be available to the Contractor. There is limited Cellular phone service available at the Dworshak Dam area.

1.10 CONTRACTOR'S MISCELLANEOUS STRUCTURES

The building of structures, the erection of tents or other forms of protection, will be permitted only at such places as the Government shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a satisfactory manner. Temporary Contractor facilities provided during Construction shall be removed upon satisfactory completion of the last unit's operational tests. As a minimum the area shall be left looking "broom clean" and at least as clean as before the structure placement.

1.11 SAFE CLEARANCE PROCEDURES

The Dworshak Dam project personnel use a Safe Clearance System, to ensure continuity of service and safety to personnel and equipment. Any work performed which requires taking the Project's operating equipment out of service will be done only after a formal clearance is obtained by the GQAR through the Dworshak Dam Control Room Operators with 48-hour minimum notice. Contractor personnel shall not violate clearance. Any violation of Safe Clearance Procedures will be grounds for removal of the offender(s). Up to five copies of The Dworshak Dam Safe Clearance Procedure will be supplied to the Contractor upon request.

1.12 DAILY CLEANUP AND DISPOSAL

All debris resulting from the work, such as waste metalwork, packing cases, scrap lumber, oil and grease spills, and other debris shall be collected, removed, and disposed of off-site at least once per week. The Government's trash cans, dump boxes and other containers shall not be used. Liquid waste shall not be disposed of in powerhouse drains. All costs of removing debris shall be incidental to the work, and no separate payment will be made therefore.

1.13 STORAGE OF EQUIPMENT AND MATERIALS

Storage of equipment and materials will be permitted only in designated staging areas. A minimum access space of three feet shall be maintained between the Contractor's stored items and the existing powerhouse equipment.

1.14 CRANES AND HEAVY EQUIPMENT

1.14.1 Contractor Crane Safety

Contractor's cranes and equipment furnished for this work shall conform with all applicable OSHA requirements and referenced EM 385-1-1 in Section I, clause ACCIDENT PREVENTION including ALT1. Contractor shall submit a lifting diagram addressing such issues as lift, trim, maximum load, maximum wind speed, lifting radius and all other applicable information required by EM 385-1-1 and OSHA as part of the Loading Plan.

1.14.2 Contractor Crane Testing

All Contractor cranes shall be tested in accordance with EM 385-1-1 prior to use on the project and the tests shall be witnessed by the GQAR. Forty-eight hours notice of the test, excluding weekends and federal holidays, shall be given by the Contractor.

1.14.3 Contractor's Cranes and Heavy Equipment

A Loading Plan, which includes the planned method of transportation and operation of Contractor provided cranes and other heavy equipment to be used in the performance of this contract, shall be shall be submitted for government approval and coordinated with the GQAR. This shall include the type, size, loading, and placement of outriggers of all cranes or heavy equipment and the proposed transportation routes and work areas to be used on the project. Operation of heavy equipment adjacent to existing structures shall be avoided when possible.

1.14.4 Movement of Equipment and Materials by the Contractor

The Contractor shall provide all cranes, rigging, lifts, operators, and other necessary means to move equipment or material as required to pursue and complete the work whether owned by the Government or by the Contractor unless otherwise specifically mentioned. This includes but is not limited to the unloading and loading of equipment and material.

1.14.5 Use of Government Cranes

Government cranes will not be available for the Contractor's use.

1.15 DAMAGED EQUIPMENT OR ABNORMAL CONDITIONS

The GQAR shall be informed immediately upon finding any damaged equipment or other abnormal conditions involving additional work in which the Contractor believes he has no responsibility. The failure or abnormality shall not be disturbed until witnessed. Any damage or abnormal conditions not reported as specified above but discovered at a later date, shall be corrected at the Contractor's expense.

1.16 PROTECTION OF MATERIAL AND WORK

Materials, supplies, tools, equipment and Government property (including all tools, equipment, and special devices supplied by the Contractor and to be turned over to the Government at the end of the Contract) shall be protected and preserved in accordance with manufacturer's recommendations. If material, equipment, supplies, and work performed are not adequately

protected, such property may be protected by the Government and the cost thereof will be charged to the Contractor or deducted from any payment due.

1.17 DRAWINGS AND MANUALS

Any additional existing drawings and manuals required for the work that are not included herein will be available for viewing at The Dworshak Dam Project Administration Building, during normal project day shift working hours, from 6:30 am to 5:00 PM, Monday through Thursday. Drawings and manuals shall not be removed from the office. However two copies of available technical data and drawings not included in the reference drawings will be made at no cost to the Contractor within five calendar days, after the request for such copies has been made.

1.18 CONTRACTOR'S WORK SUPERVISOR AND PERSONNEL

1.18.1 Contractor's Work Supervisor(s)

At least one full-time employee of the Contractor shall be available at the worksite anytime other Contractor or subcontractor personnel are working on the site to supervise and direct the work specified herein. Supervisor(s) shall be present at the site during transformer assembly and installation, and shall be responsible for providing complete and correct direction of all installation work. The supervisor(s) shall be responsible for following the Government's Safe Clearance Procedure, paragraph 1.11. The supervisor(s) shall be fluent in the spoken and written English language. The supervisor(s) shall have been engaged in similar generator step-up power transformer installation field work, as is specified herein, for a minimum of three years, and shall have performed this work at a minimum of two different facilities. The Contractor's Work Supervisor(s) Qualifications, experience, a verifying contact, name and phone number shall be submitted for at least two such facilities.

1.18.2 Contractor's General Personnel

(1) General. The Contractor shall prepare and revise whenever organizational changes occur, a project organization chart reflecting at least those positions described herein and defining their work relationships, etc. The Contractor shall maintain a complete organizational chart of all positions that will be working on the project. All personnel employed by the Contractor shall be fully qualified in their respective fields to render the services necessary. The Contractor's organizational plan shall be maintained in the CQC Plan and submitted upon request by the GQAR.

(2) Identification of Contractor's Employees. The Contractor shall be responsible for furnishing to each employee at the powerhouse and for requiring each employee at the powerhouse to display such identification as approved and specified below. All Contractor personnel, prior to engaging in work on project premises, shall either be issued an identification card by the Contractors or agree to provide their driver's license as I.D. upon request. If the Contractor so decides to furnish I.D. cards to all employees, the card must include the following information:

Name of Contractor
Name of Employee

Birth date
Weight
Hair color
Eye color
Recent photo

All prescribed identifications shall be returned immediately to the Contractor upon release of any employee. The Contractor shall include a list of all Contractor employees, which includes their titles and who will be working on the project. This listing shall be revised and resubmitted when personnel changes occur. When required by the Government, the Contractor shall obtain and submit fingerprints of all persons employed to work at the Dworshak Dam Project.

1.19 PROTECTION AND RESTORATION OF EXISTING FACILITIES

Existing facilities shall be protected whether or not shown on the drawings. Upon completion of the work, existing facilities, not included as a portion of the work, shall be left in a condition equal to the original condition prior to the contract. Costs for repair and restoration of any facilities shall be considered to be incidental to and included in the contract price.

1.20 CARE OF DRAINS

Existing powerhouse floor drains including the unwatering drains and transformer cell drains shall not be used for disposal of any solid material and or any liquids other than clear water. The Contractor shall clean Contractor-obstructed drains. Costs incurred in the cleaning and clearing of plugged drains, shall be borne by the Contractor.

1.21 WORK BY THE GOVERNMENT CONCURRENT WITH CONTRACTOR WORK

The Government will limit interference with the Contractor's work to the maximum reasonable extent and the Government and Contractor shall coordinate as necessary.

1.22 NOISE CONTROL

Noise control and noise levels shall conform to requirements set forth in the appropriate regulations, including EM 385-1-1, Section 05.C, 29 CFR 1910.95, 29 CFR 1926.52 and .101. The most conservative requirement shall govern.

1.23 BARRICADES AND DANGER, DETOUR AND WARNING SIGNS

1.23.1 Barricades, and Danger and Detour Signs

The Contractor shall provide, erect, and maintain barricades, red lights, danger signals, and detour and other signs; provide watchmen; and take precautions for the protection of the work and the safety of the public. Powerhouse galleries, floors, Project roads, etc. obstructed or closed to traffic shall be protected by barricades. Obstructions shall be continuously illuminated day and night. Lanterns or flares shall illuminate warning signs day and night. The signs, signals and barricades shall comply with EM 385-1-1 SECTION 08, 29 CFR 1910.145 and 29 CFR 1926 SUBPART G.

1.23.2 Warning Signs

Warning signs shall be erected 500 feet in advance of any place on the project where operations interfere with the use of a road by traffic. Warning signs shall conform to the standards established in Part IV of the DOT "Manual on Uniform Traffic Control Devices for Streets and Highways".

1.24 SCAFFOLDING

Scaffolding, ladder, stairway, or other access schemes proposed for use shall be submitted for approval, including type, layout, and connections. Approved anti-slip surface material shall be installed on scaffolding platforms. Scaffolding shall comply with EM 385-1-1.

1.25 SITE WORKING HOURS

1.25.1 Government Project Personnel Working Hours

The scheduled working hours of the Project staff are Mondays through Thursdays from 6:30 a.m. until 5:00 p.m. Fridays, Saturdays and Sundays are non-work days. Crews and staff do not work on Federal Holidays. All Project support required by the Contractor shall be scheduled during the Project staff working hours.

1.25.2 Contractor's Working Hours

The Contractor's desired working hours are between 6:30 a.m. and 5:00 p.m., Monday through Thursday. The schedule of work hours, shifts and days of the week shall be coordinated with the GQAR. Notification of any proposed changes of the schedule of regular work hours, overtime work hours, and shifts of work crews and personnel at the site shall be coordinated with the GQAR.

1.26 SITE WORK SCHEDULE

A Site Work Schedule shall be submitted and shall including major and minor work elements and stages of the work. These documents shall be updated and submitted to reflect the actual work elements and progress and that anticipated in the future.

1.27 SITE INVESTIGATIONS AND CONDITIONS AFFECTING THE WORK

The Contractor shall take steps reasonably necessary to ascertain the nature and location of the work, the general and local conditions shall be investigated which can affect the work or its cost, including but not limited to the following. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expenses to the Government. The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless the understanding or representation is expressly stated in this contract.

(1) Conditions bearing upon transportation, disposal, handling, and storage of materials.

(2) The availability of labor, water, electrical power, and roads.

(3) Uncertainties of weather, river stages, or similar physical conditions at the site.

(4) The conformation and conditions of the ground and equipment and facilities to be replaced and/or rehabilitated.

(5) The character of equipment and facilities needed preliminary to and during work performance.

(6) The amount of work space, accessibility, lighting, etc.

1.28 PERMITS AND RESPONSIBILITIES

The Contractor shall, without additional expense to the Government, be responsible for obtaining necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and property of others. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for completed unit of work that may have been accepted under the contract.

1.29 QUALITY CONTROL AT THE JOB SITE

The Contractor's quality control system shall encompass actions involving selection of construction material sources and suppliers, on-site and off-site fabrication of Contractor-furnished items to be included in the work, on-site and off-site production of construction materials, work placement procedures, workmanship, inspection, and testing. The system shall provide supervision, inspection, and tests of all items of work, including that of its suppliers and subcontractors, that will assure the compliance of all work with applicable specifications and drawings in respect to the Contractor furnished equipment, materials, workmanship, construction, finish, functional performance, and identification. The Contractor's system shall encompass all management and supervisory actions taken by its staff that affect quality of the finished construction work, including all inspection controls and tests required for compliance with the contract, except for those inspections and tests specifically reserved to be accomplished by the Government.

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SECTION 01270

MEASUREMENT AND PAYMENT

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL INFORMATION

In each instance the contract price for an item will constitute full compensation as herein specified, as shown, or as otherwise approved. The contract price and payment will also constitute full compensation for all work incidental to completion of the item, unless such work is otherwise specifically mentioned for separate payment under another bid item. In the event any work is required by the specification sections or by the drawings and not specifically mentioned in the measurement and payment paragraphs, separate or direct payment will not be made and all costs thereof are incidental to and included in the contract prices and payments for all items listed in the bid schedule.

1.2 MEASUREMENT

Items measured as a Lump Sum (LS) will be measured for payment as a completed job, in place, in the locations indicated. This measurement includes all incidental work and materials that are necessary to make a complete job. Unless the payment paragraph makes a specific exception of an item, incidental items will not be measured under another item.

1.3 PAYMENT

1.3.1 General

Payment for all work specified, shown, or incidental to complete the work will be made as follows:

(1) Line Item No. 2001; Design one 121,500/162,000 kVA, 500 kV, Class ONAN/ONAF, Single Phase Spare Power Transformer.

Payment shall be full compensation for performing all work to design the transformer, complete, as specified and as approved. This design is considered a single event, and no design costs shall be loaded into the manufacturing costs.

(2) Line Item No. 2002; Manufacture, Factory Test, and Deliver One 121,500/162,000 kVA, 500 kV, Class ONAN/ONAF, Single Phase Spare Power Transformer and Accessories Complete to Railhead in Ashaska, Idaho, and Provide Services of Erecting Engineer.

Payment shall be full compensation for the labor, materials, equipment and transportation required to manufacture, test, and deliver the transformer and accessories by rail to Ashaska, Idaho, including O&M manuals and erecting engineer services.

(3) Line Item No. 2003; Perform delivery inspection, and truck transport transformer and accessories from railhead in Ashaska, Idaho, to the Dworshak Dam Powerhouse.

Payment shall be full compensation for the labor, materials and equipment required to perform an inspection of the transformer on the railcar, off-load the transformer and accessories from the railcar onto a transport truck, and transport the transformer and accessories to the Dworshak Dam powerhouse.

(4) Line Item No. 2004; Offload Transformer and Accessories at Dworshak Dam, Perform Inspection and Tests, Move Transformer to Permanent Storage Location, and Assemble the Transformer.

Payment shall be full compensation for the labor, materials and equipment required to perform the inspections and tests on the transformer prior to off-loading from the transport truck at the Dworshak Dam Powerhouse, movement of the transformer and accessories to the permanent storage location, placement of the transformer onto the concrete mounting pad, and complete assembly of the transformer.

(5) Line Item No. 2005; Furnish Transformer Oil, Oil-Fill Transformer, and Perform Field Tests.

Payment shall be full compensation for the labor, materials and equipment required to deliver the new transformer oil, hot oil fill the transformer under vacuum, and perform all required field tests.

(6) Line Item No. 2006; Furnish Jacks, and Tools.

Furnishing jacks and special tools necessary to move and guide the transformer will be measured for payment as a complete pay item (Lot).

Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the required equipment and tools, complete, as specified and as approved.

(7) Line Item No. 2007; Furnish Spare Parts.

Furnishing spare parts for the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the spare parts for the transformer, complete, as specified in SECTION 16277 paragraph 2.16, and as approved.

(8) Line Item No. 2008; Contractor Furnished Training.

Contractor furnished training will be measured for payment as a complete pay item (Lump Sum). Payment shall be full compensation for performing training of Government personnel, complete, as specified in SECTION 01600 paragraph 3.12, and as approved.

PART 2 PRODUCTS/ PART 3 EXECUTION

(NOT USED)

-- End of Section --

SECTION 01306

OPERATIONS AND MAINTENANCE DATA

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SECTION 01306

OPERATIONS AND MAINTENANCE DATA

PART 1 GENERAL

1.1 GENERAL INFORMATION

Parts catalogs and operating instructions needed or useful in operation, maintenance, repairs, dismantling, or assembling, and for repair and identification of parts for ordering replacements, shall be especially prepared. The parts catalogs and operating instructions shall cover all equipment furnished under this contract and shall be assembled under a suitable common cover. The assembled material shall include complete identification of the spare parts furnished in compliance with the requirements of these specifications.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES":

SD-10 Operation and Maintenance Data

1. Initial Submittal of Operations and Maintenance Data; G, HDC

An initial submittal of three complete draft copies of the Operations and Maintenance Data shall be made not less than 45 days prior to delivery of the equipment. The COR will return one draft copy with appropriate approval of, or comment on, the acceptability of the submittal. The Contractor shall resubmit the one draft copy with such corrected and/or additional data sheets and drawings as may be directed by the COR. One copy of each revised data sheet and drawings shall be furnished also for each of the two draft copies retained by the COR.

2. Final Submittal of Operations and Maintenance Data; G, HDC

Upon "Final" approval of the draft copies of the Operations and Maintenance Data, the Contractor shall submit three additional copies for a total of six to the COR. All copies shall be furnished no later than the date specified for delivery of the equipment.

PART 2 PRODUCTS

2.1 BINDER REQUIREMENTS

Data for equipment shall be assembled in a binder for 8 ½ by 11 inch sheets with slide binding or screwpost fastening for replacement. Loose-leaf binders are not acceptable. A title on the cover shall show the information stated in paragraph 3.2 (1)-(7).

PART 3 EXECUTION

3.1 SPECIFIC REQUIREMENTS

Shop assembly or special drawings shall be of a size that requires folding only in left to right coordinate. (11" X 17" maximum, 8-½" X 11" minimum) A permanent reproducible shall be furnished for all drawings. This reproducible shall be in addition to the five copies specified. Each sheet shall be numbered and a revised index for the existing manual shall be provided. One copy of such manual shall contain all original versions of standard catalog cuts, manufacturer's data, parts sheets, and illustrations. All other copies shall be readable and non-permanent or non-water-resistant copies are not acceptable. All nonapplicable data such as description of other models, optional equipment not included, etc. shall be marked out. If reference is made to other drawings or data they shall be included. The O&M data shall list equipment covered; the manufacturer; and name, address, and telephone number of the local representative.

3.2 FORMAT

Binders shall be side-binding, telescoping-post, expandable-back, and shall have a supported vinyl cover with a stiff binder board for 8 1/2- by 11-inch sheets. Ring-type loose leaf binders will not be acceptable. One source of acceptable binders is as follows:

Arts & Crafts Book Manufacturing
E 618 Second Avenue
Spokane, Washington 99202
Telephone: (509) 747-3818

One 11- by 17-inch copy of each of the drawings approved under this contract shall be furnished and shall be folded and bound for easy unfolding without removal from the binder. Each sheet in the binder shall be numbered and an index provided for ready reference to the data. All standard catalog cuts, manufacturer's printed data or descriptive literature, parts sheets, illustrations, etc., shall be either original manufacturer sheets or reproduced copies of equal clarity and durability. The following identification shall be inscribed on both the spines and covers:

(1) The words "OPERATIONS AND MAINTENANCE MANUAL."

(2) The name and location of the building, facility, and/or project.

(3) The volume number and total number of volumes.

(4) The systems and/or equipment therein.

(5) The name of the Contractor.

(6) The contract number.

(7) The year of completion of the contract.

3.3 CONTENT

The O&M manuals shall be structured to address each of the following topics in order for each system. When the topic does not apply to a particular system the topic name will be included in the manual with the words "DOES NOT APPLY."

3.3.1 Warning Page

A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

3.3.2 Index

Each manual shall have a master index at the front identifying all manuals and volumes and subject matter by system name for each. Following the master index, each manual shall have an index of its enclosures listing each volume, tab numbers, etc., as necessary to readily refer to a particular operating or maintenance instruction. Rigid tabbed fly leaf sheets shall be provided for each separate product and/or piece of equipment under each system in the manual. When a manual is divided into volumes, each volume shall have a master index at its front, followed by an index for the specific volume listing in detail all enclosed instructions for materials, individual pieces of equipment, and systems. All pages shall be numbered with the referenced number included in the index.

3.3.3 Description

Narrative and technical descriptions of the system and of the interrelations with other systems shall be provided.

3.3.4 Catalog Data Sheets

All catalog data sheets shall be inserted in an appendix at the end of the manual following the preventative maintenance (PM) charts appendix. This appendix shall be for catalog data sheets only. An index of the catalog data sheets shall be provided to provide clear and concise reference to shop drawings and individual pages within the manual. Standard catalog data sheets will not be acceptable unless irrelevant parts are marked out (with black "X") and relevant parts clearly identified. Any data on catalog sheets which does not directly relate to purchased equipment shall be marked out. Parts shall be so identified that they can be readily ordered from local area industrial supply outlets if not of special manufacture. A cross-reference between items described in catalogs, instructions, and drawings shall be provided to facilitate ease of location of parts described. Highlighting and "scribble notes" will not be acceptable

for identification purposes. Catalog data sheets shall be inserted into the manual such that positive identification of all parts on catalog data sheets are clearly identified by:

(1) Part Name. A clear and descriptive name shall be given to each component in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and telephone number of the manufacturer shall be given along with the catalog part number.

(3) Material Safety Data Sheet (MSDS). A copy of the MSDS forthe transformer oil shall be included with the catalog data sheets.

3.3.5 Spare Parts Listing

The spare parts listing shall be inserted in an appendix at the end of the manual following the catalog data sheets. This appendix shall be for spare parts listing only. The spare parts listing shall clearly state the spare parts supplied and a list of recommended spare parts to be stocked. The spare parts listing shall clearly identify:

(1) Part Name. A clear and descriptive name shall be given to each component listed as a spare part in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and Telephone number of the manufacturer shall be given along with the catalog part number.

(3) Quantity. The quantity of each part listed as a spare part shall be given.

(4) Reference to Catalog Data Sheets. Each spare part shall be referenced to the corresponding catalog data sheet by page number.

(5) Price.

3.3.6 Operation Data

The operation data shall include specific operating instructions, functional description of operating parts, and special precautions or procedures to be considered. The Contractor shall be responsible for the necessary coordination between his subcontractors, suppliers, and manufacturers to assure complete submittals on individual interrelated equipment components. The data shall include the following:

(1) Check List Prior to Start Up. Precautions and prechecks prior to start up of equipment and/or system, including safety devices, monitoring devices and control sequence shall be provided.

(2) Start Up and Operation. Step-by-step sequential procedures For start up and normal operation checks for satisfactory operation shall be provided. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the operating instructions and flagged for the

attention of the operator. Procedures shall include test, manual or normal, and automatic modes.

(3) Shutdown. Procedures for normal and emergency shutdown of equipment and/or systems shall be provided. The instructions shall include any procedures necessary for placing the equipment and/or system on standby or preparing the equipment and/or system for start up at a later time. Procedures shall include test, manual or normal, and automatic modes.

(4) Normal Operating Conditions. A tabular listing of the Normal operating conditions of each individual component, including the settings, operating temperature, valve conditions, etc.

3.3.7 Maintenance Procedures

Recommended procedures shall indicate preventive maintenance, lubrication, and good housekeeping practices which should be performed by operating personnel as well as more complex maintenance procedures which would normally be performed by trained maintenance personnel only, including instructions for oil filling and drying the oil-filled transformer. The procedures shall be presented with a schedule indicating time frames or operating hours for specific maintenance to be accomplished. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the maintenance procedures and flagged for the attention of personnel. The procedures shall include necessary operating instructions for taking equipment off line, putting equipment on line, or putting equipment on standby. The instructions shall include all necessary material, equipment, and system data to perform maintenance work and shall include, but not be limited to, manufacturers bulletins, catalogs, and descriptive data; certified performance curves, copies of approved test plans, including logs and records of performance acceptance test results, and actual adjustments made during final acceptance and inspection; system layouts, including block diagrams, wiring, control, and isometric diagrams; schematic items within the facility; interrelationships with other items of system; and a list of special tools required.

3.3.8 Repairs

Repair procedures shall be presented with a step-by-step procedure for locating and correcting the trouble. A "shop manual" may be used for this purpose. The procedures shall clearly indicate a major repair activity which should only be performed in a shop or factory versus normal repair work that may be performed onsite or with equipment online. The procedures shall also clearly indicate the limit of repair work that may be performed by Government personnel during the warranty period without voiding warranty provisions. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the repair procedures and flagged for the attention of personnel. Repair procedures shall be keyed to a troubleshooting guide outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.9 Operator Preventive Maintenance, Major Maintenance, and Adjustments

The instructions shall include recommended operator preventive maintenance which would normally be performed by operating personnel and adjustment procedures necessary for normal operation. Schedules shall be provided indicating time frames or operating hours for initiating operator maintenance and adjustments, and including manufacturer's recommended major maintenance requirements. Emergency adjustments shall be included and flagged for operator's attention; the instructions shall also include procedures for emergency repairs that could be performed by operating personnel. These emergency repairs or "trouble-shooting guides" shall be outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.10 Maintenance Schedule

A separate schedule of all required periodic maintenance shall be included. This schedule shall list by frequency of occurrence all lubricants and special adjustments required. The types and amounts of lubrication must be specified. The Contractor shall verify that the furnished maintenance schedule agrees with the published manufacturer's data.

3.4 ELECTRONIC COPY

One copy of the complete O&M manual shall be furnished in electronic format on a CD ROM. The use of the Adobe Acrobat portable document format (PDF) is acceptable.

3.5 PAYMENT

No separate payment will be made for the preparation and submittal of O&M manuals. Costs incurred by the Contractor in the preparation and submittal of O&M manuals shall be considered as incidental and included in the contract price. Approval and acceptance of the final O&M manuals shall be accomplished before final payment is made to the Contractor.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

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1.1 SUBMITTAL IDENTIFICATION (SD)
1.2 SUBMITTAL CLASSIFICATION
1.3 APPROVED SUBMITTALS
1.4 DISAPPROVED SUBMITTALS
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1.8 SCHEDULING
1.9 TRANSMITTAL FORM (ENG FORM 4025)
1.10 SUBMITTAL PROCEDURES
1.11 CONTROL OF SUBMITTALS
1.12 GOVERNMENT APPROVED SUBMITTALS
1.13 INFORMATION ONLY SUBMITTALS
1.14 STAMPS

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-09 Manufacturer's Field Reports

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. A “shop drawing” is a Contractor’s or manufacturer’s drawing which provides detail for the manufacturing, delivery, site movement, and assembly of the equipment provided.

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings", as defined, above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error

which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 GENERAL SUBMITTAL REQUIREMENTS

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register, ENG Form 4288, indicating items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project. The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 "Shop Drawings" Procedures

The procedure for "shop drawings" shall be as follows:

(1) "Shop Drawings" Approved by Contractor. All "shop drawings" submittals shall be reviewed and corrected to make them complete and in accordance with the contract. Approval shall be indicated on each drawing by an "Approved" stamp as shown in paragraph 1.14. Names and titles of individuals authorized by the Contractor to approve drawings shall be provided prior to any submission. All shop drawings shall be submitted as indicated herein. Submittals which are not required to be approved by the Government ("information only") will be monitored and spot-checks will be made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for Government approvals.

(2) "Shop Drawings" Approved by the Government. Before submission the Contractor shall review and approve all "shop drawings" prepared by subcontractors, suppliers, and the Contractor for completeness and compliance with plans and specifications, and shall so certify by stamp on each drawing or item of printed material. (Red markings are reserved for the Government.) Suppliers or subcontractors certifications are not acceptable as meeting this requirement. Submittals will be reviewed and processed as follows: NOTE: The following action codes are to further define only the referenced codes on the reverse side of ENG Form 4025.

a. Action Code A (Approved as Submitted). Shop drawings which can be approved without correction will be stamped "Approved" and one reproducible, or two copies of catalog and other printed data, will be returned to the Contractor.

b. Action Code B (Approved, Except as Noted, Resubmission Not Required). Shop drawings which have only minor discrepancies will be corrected and stamped "Approved as Corrected", or "Except as Noted." Corrections will be identified. Distribution will be same as for "Approved" drawings.

c. Action Code C (Approved, Except as Noted, Resubmission Required). Two prints of shop drawings which are incomplete or require more than minor corrections will be marked in red to indicate necessary corrections. One marked copy will be returned to the Contractor stamped "Returned for Correction." Transparencies of such drawings will be destroyed.

d. Action Code E (Disapproved). One print of shop drawings which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections will be returned to the Contractor stamped "Disapproved." An explanation will be furnished on the print or on ENG Form 4025 indicating reason for disapproval. Transparencies of such drawings will be destroyed.

f. Resubmittal. Resubmittal will not be required for drawings with Action Code A or B unless subsequent changes are made by the Contractor or by a contract modification. For drawings with Action Code C or E, corrections required shall be made, any changes shall be noted by dating the revisions to correspond with the change request date, and the drawings shall be promptly resubmitted for review. Government costs incurred after the first resubmittal will be charged to the Contractor.

1.10.2 "Shop Drawings" Submittal

1.10.2.1 General

ENG Form 4025 shall be in three (3) copies used for transmitting "shop drawings" submittals. Each submittal requiring Government approval, five copies; and for information only, three copies, shall be listed separately naming subcontractor, supplier, or manufacturer, specification paragraph number(s), drawing/sheet number(s), pay item number, and any other information needed to identify the item, define its use, and locate it in the work. Each submittal shall be complete containing all information needed to determine contract compliance.

1.10.2.2 Drawings

Each drawing shall be not more than 28 inches high by 40 inches wide, with a title block in lower right hand corner and a 3 by 4 inch clear area adjacent. Title block shall contain subcontractor's or fabricator's name, contract number, description of item(s), bid item number, and a revision block. Unless otherwise specified, two prints of any type, except blueprints, and one electronic drawing file in an approved Computer Aided Design/Drafting (CADD) format discussed in paragraph 1.10.2.3 below shall be submitted. A blank margin of 3/4 inch at bottom, 2 inches at left, and 1/2 inch at top and right shall be provided. Separate drawings are required for each bid item. Computed weight shall be indicated for all items for which payment is based on weight. Where drawings are submitted for assemblies of

more than one piece of equipment or systems of components dependent on each other for compatible characteristics, complete information shall be submitted on all such related components at the same time. The information shall be complete and the sequence of drawing submittal shall be such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, shall consist of complete assembly and detail drawings. All revisions after initial submittal shall be shown by number, date, and subject in revision block. Any drawing or electronic drawing file submitted that is not of satisfactory quality will be returned without action.

1.10.2.3 Final Approved Version of Electrical and Mechanical Shop Drawing

Upon completion of the work under this contract, the Contractor shall submit for review and approval by the Contracting Officer, hard copies (black and white prints) of the final approved versions of the drawings. The drawings shall show all changes and revisions, including any field changes, made up to the time that the work is completed and accepted. The Contractor shall also prepare an index drawing for all Contractor prepared drawings. The index drawing shall include the sheet number, file number, drawing title, and the CADD file name for each drawing. After approval of these drawings, the Contractor shall furnish a complete set of electronic files in Bentley (Intergraph) MicrosStation compatible with Version 8, for all drawings produced by the Contractor in performance of this contract. Electronic files shall be .dgn format with element types that can be edited (i.e. no attached raster files, .dxf, or .dwg file formats will be accepted). Each drawing sheet shall be a separate CADD file. The files shall be submitted on CD ROM's. In addition, the Contractor shall furnish one paper copy of each drawing that is on the CD ROM's. The paper drawings and the files on the CD ROM's shall be identical. All paper drawings submitted to the Contracting Officer shall be no larger than 28 by 40 inches in size.

1.10.3 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.10.4 Other Submittals

All requirements for "shop drawings" under paragraphs 1.10.2.1 and 1.10.2.2 shall apply to catalog cuts, illustrations, printed specifications, or other data submitted except that five copies for Government approval and three copies for information only shall be submitted. Submittals shall be made on 8 1/2- by 11-inch paper or when appropriate as a drawing not larger than 28 inches high by 40 inches wide. Inapplicable portions shall be marked out and applicable items such as model numbers, sizes, and accessories shall be indicated. Decisions on these other submittals will be given in accordance with paragraph Government Approved Submittals.

1.11 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

1.13 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.14 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR
(Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

-- End of Section -

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SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Dworshak Dam Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 01010																										
SD-01		1	1.14	Loading Plan				x								x	AO									
SD-01		2	1.18.1	Contractor's Work Supervisor Qualifications					x							x	AO									
SD-01		3	1.24	Access Schemes				x								x	AO									
SD-01		4	1.26	Site Work Schedule				x								x	AO									
SECTION - 01306																										
SD-10		1	1.2	Initial Submittal of O&M Data										x		x	HDC									
SD-10		2	1.2	Final Submittal of O&M Data										x		x	HDC									
SECTION - 01355																										
SD-01		1	1.10.1	Environmental Protection Plan				x								x	AO									
SECTION - 01600																										
SD-01		1	3.3	Transformer Movement Plan				x								x	HDC									
SD-01		2	3.5.1	Site Del Instruction Procedure and Schelule				x								x	HDC									
SD-01		3	3.7	Transformer Shipping Restriction				x								x	HDC									
SD-01		4	3.8.2	Transformer Site Assembly Procedure			x									x	HDC									
SD-06		1	3.8.3	Transformer Oil Field Test Report						x						x	AO									
SD-06		2	3.10	Tran Field Test Report						x						x	AO									
SD-08		1	3.12	Training Outline				x								x	AO									
SD-09		1	3.5.1	Impact Recorder Summary Report						x						x	AO									
SD-09		2	3.5.3	Erecting Engineer's Record									x			x	AO									
SD-09		3	3.11	Site Delivery Inspection Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Dworshak Dam Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 16277																										
SD-02		1	1.4	Outline and Detail Drawings		x										x	HDC									
SD-02		2	1.4	Installlation and Assembly Drawings		x										x	HDC									
SD-05		1	1.4	Descriptive Data	x											x	HDC									
SD-05		2	2.1.5.2	Seismic Anchorage Design Calculations	x											x	HDC									
SD-06		1	3.2	Transformer Factory Acceptance Test Report						x						x	HDC									
SD-06		2	3.2.3.1	Bushing Design Tests						x						x	HDC									
SD-06		3	3.2.3.3	Bushing Routine Test Reports						x						x	HDC									
SD-06		4	3.2.3.4	Bushing Current Transformer Test Reports						x						x	HDC									
SD-07		1	2.1.5	Transformer Siesmic Capability Certification							x					x	HDC									
SD-07		2	2.12.1	Transformer Oil Certification							x					x	HDC									
SD-07		3	3.2	Notification of Factory Testing							x						HDC									
SD-08		1	3.2	Factory Test Procedures			x									x	HDC									
SECTION - D																										
SD-07		1	1.2 (2)	Expected Delivery Date Notification				x								x	AO									
SD-07		2	1.2 (5)	Shipping Notices	x											x										
SECTION - E																										
SD-01		1	1.3.2	Quality Control Plan				x								x	HDC									
SD-09		2	1.8	Material Inspection and Receiving Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Dworshak Dam Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL: DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	CLASSI-FICATION: INFORMATION ONLY	GOVERNMENT APPROVAL	REVIEWER	CONTRACTOR SCHEDULE DATES: SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CONTRACTOR ACTION: CODE	DATE	SUBMIT TO GOVERN-MENT	GOVERNMENT ACTION: CODE	DATE	REMARKS
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION -	**F**																									
SD-07		1	1.6	Project Schedule				x								x	AO									
SECTION -	**H**																									
SD-07		1	1.9	Bill of Materials	x											x	AO									
SD-07		2	1.1	Erecting Engineer's Qualifications					x							x	HDC									

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SECTION 01355

ENVIRONMENTAL PROTECTION

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SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 GENERAL INFORMATION

This section covers preventing environmental pollution and minimizing environmental degradation during, and as a result of, transformer delivery, site movement, assembly and oil filling operations at Libby Dam. Other requirements in the sections may also contain specific requirements for environmental protection. Those specific requirements are in addition to or modify the requirements in this section. The control of environmental pollution requires consideration of sound levels, air and water.

1.2 PUBLICATIONS

1.2.1 APPLICABLE REGULATIONS

All environmental pollution shall be prevented, abated, and controlled and environmental degradation arising from site work activities shall be minimized by complying with all applicable Federal, State, and local laws and regulations, as well as specific requirements of this contract. Where conflicting or duplicate regulations apply, the most stringent requirement shall govern. The Contractor shall comply with the following list of environmental regulations where applicable. This list is not inclusive of all environmental requirements, but represents the Federal regulations most likely to apply to work under this contract.

a. Clean Air Act - 40 CFR 61: Emission Standards for Hazardous Air Pollutants

b. Solid Waste Disposal Act - 40 CFR 241: Land Disposal - 40 CFR 245: Resource Recovery

c. Resource Conservation and Recovery Act - 40 CFR 260-272 : Hazardous Waste Management

d. Comprehensive Environmental Response , Compensation and Liability Act - 40 CFR 300-302: National Oil and Hazardous Substances Contingency Plan for hazardous substance spills and cleanup

e. Clean Water Act - 40 CFR 110-117, 122: Point source discharges into U.S. waters

f. Executive Order 12856 - Federal Compliance Order with the Emergency Planning and Community Right-to-Know Act and the Pollution Prevention Act

f. 49 CFR 100-177, Hazardous materials transportation regulation

1.2.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.62	Safety and Health Regulations for Construction: Lead
33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171-178	Hazardous Materials Regulations

1.3 SUBMITTALS

The following shall be submitted as stated in accordance with SECTION 01330, "SUBMITTAL PROCEDURES":

SD o1 Preconstruction; G HDC

Environmental Protection Plan including proposals for implementing this section for environmental protection with 180 days after Notice to Proceed (NTP) and prior to commencing site work. Included in the Environmental Protection Plan shall be the Spill Control Plan and Contaminant Prevention Plan. If satisfactory, the plan will be approved and one copy will be returned. If unsatisfactory, the plan will be returned for resubmission (see paragraph 1.10, "ENVIRONMENTAL PROTECTION PLAN").

1.4 DEFINITIONS

1.4.1 Environmental Pollution And Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.4.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.4.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents and waste solvents.

1.5 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of site work. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.6 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.7 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.8 NONCOMPLIANCE

An order may be issued stopping all or part of the work for failure to comply with the provisions of this section until corrective action has been taken. No time lost due to such stop orders shall be the subject of a claim for extension of time or for costs or damages unless it is later determined that the Contractor was in compliance.

1.9 ENVIRONMENTAL LITIGATION

1.9.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts of omissions of the Contractor or a subcontractor at any tier not required by the terms of this Contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this Contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this Contract under the terms of Contract Clause SUSPENSION OF WORK. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) as provided in this clause, subject to the provisions thereof.

1.9.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

1.10 ENVIRONMENTAL PROTECTION PLAN

1.10.1 General

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the

Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during sit work. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.10.2 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During site work, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.10.3 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

(1) Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.

(2) Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

(3) Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

(4) Description of the Contractor's environmental protection personnel training program.

(5) A Spill Control plan shall be provided, and shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

(c) Training requirements for Contractor's personnel and methods of accomplishing the training.

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified. Number required and availability must consider the logistics and time required to begin containment and cleanup of a spill, accessibility, number of remote work areas, number and location of floating plants on the river, etc. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

(f) The methods and procedures to be used for expeditious contaminant cleanup.

(g) The name of the individual who will report any spills and who will follow up with complete documentation.

(h) The 24-hour spill notification telephone numbers including NRC, OERS, County, and local police and/or Emergency Response organization as appropriate and required. The plan shall include 24-hour emergency number for the GQAR, Project Engineer, and Resident Engineer.

(6) A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

1.10.4 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, report forms, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.11 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review,

processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.12 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 IMPLEMENTATION

3.1.1 Planning

No physical work at the site shall be started until an environmental plan has been approved or specific authorization is obtained to start a phase of the work. Preparation and submittal of supplemental plans may be required if additional environmental protection planning is found necessary for later phases of work. As a minimum the plan shall include the sections indicated below:

(1) A contamination-prevention section listing all potentially hazardous petroleum products and toxic materials on the job site and corresponding provisions to be taken to prevent accidental or intentional introduction of such materials into any waterway, the air, or the ground. Section is to include plans for preventing polluted runoff from plant, equipment parking, and maintenance areas from entering local water bodies. MSDS information shall be provided to the project prior to bringing material on-site.

(2) A containment and cleanup section including the procedures, instructions, and reports to be used in the event of an unforeseen oil or chemical spill. This section shall include as a minimum:

(a) The name of the individual who will be responsible for implementing and supervising the containment and cleanup. This person shall be on-site during the handling or disposition of all potentially hazardous materials.

(b) A list of materials and equipment to be immediately available. For all work in or adjacent to water a 60-meter-long minimum containment boom, skimming equipment, and an absorbent cleanup kit shall be available at the job site. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(c) The names and locations of suppliers of containment materials and names and locations of additional fuel oil recovery, cleanup, restoration, and material placement equipment available in case of an unforeseen spill emergency.

(d) The methods and procedures to be used for expeditious cleanup.

(e) The name of the individual who will report any spills and who will follow up with complete documentation.

3.1.2 Spill Protection

Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, and waste washings from entering public lands or waters. The Contractor shall provide and utilize the following prevention/cleanup materials:

(1) Fuel dispensing vehicles shall carry a fuel containment berm such as Blue Ribbon Environmental (BRE) Tanker Fueling Berm spill kit on board at all times.

(2) Overnight containment berm for all vehicles stored unattended overnight such as BRE Port-A-Berm.

(3) Emergency spill response kit to be available within 15 minutes transport time to equipment performing work such as BRE-PZ-HMR-25G-H.

(4) Emergency spill absorbent matts (10 – 18”x18”) to be carried on board equipment performing work such as BRE-PZ-MT-1818.

(5) Blue Ribbon Environmental’s corporate office phone number is 800-436-1050, or 509-489-1704.

3.1.3 Coordination

Prior to the work a meeting shall be held with the Government to develop mutual understandings relative to the administration of the environmental protection program.

3.1.4 Completion

Before this contract is completed all restoration, cleanup, and other work required to leave the site in an acceptable condition shall have been completed. Final payment will not be made until the environmental protection requirements have been met.

3.2 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding

pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

3.3 ENVIRONMENTAL LITIGATION

3.3.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts or omissions of the Contractor or a subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this contract. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provision thereof.

3.3.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

3.4 HAZARDOUS WASTE

(1) Standards Applicable to Generators of Hazardous Wastes, 40 CFR 262, shall be complied with for the on-site handling and storage of all hazardous waste generated by the project.

(2) Hazardous waste shall not be stored on the ground, near the water or in an area where accidental release of the material can enter waterways. Secondary containment and weatherproof covering shall be used for all storage of hazardous materials or waste.

3.5 DISPOSAL OF HAZARDOUS WASTE

The following shall apply to disposal of any hazardous waste:

(1) The Contractor, where possible, shall use or propose for use materials which may be considered environmentally friendly in that waste from such materials is not regulated as a hazardous waste or is not considered harmful to the environment.

(2) Documentation for analysis, sampling, transportation, and disposal of all hazardous waste streams generated during this contract shall be in accordance with 40 CFR 260-272 and 49 CFR 100-177.

(3) A copy of all hazardous waste determinations, sample results, and shipping manifests shall be furnished to the Government Quality

Assurance Representative (GQAR) to verify compliance with Federal, State, and local regulations.

(4) All hazardous wastes shall be removed from the Project for proper disposal within 90 days of waste generation. All hazardous waste shall be packaged, labeled, and marked in accordance with 40 CFR 261 and 40 CFR 262. All hazardous waste shall be stored in accordance with 40 CFR 264.

(5) Certificates of Destruction or Disposal Certificates shall be submitted for all hazardous wastes within 14 days of actual disposal.

(6) The Contractor's Environmental Protection Agency (EPA) identification number shall be used to dispose of all hazardous wastes generated by the Contractor and its subcontractors under this contract. This is construed to mean all hazardous wastes the Contractor or subcontractors generate from materials brought on the site for the purpose of performing work under the terms of the contract.

(7) The Government's EPA identification number shall be used to dispose of all hazardous waste generated from Government-owned facilities on the project. This is construed to mean hazardous wastes generated from the repair, demolition, or removal of any existing materials and buildings from Government facilities and is not intended to include any wastes generated by the Contractor in the performance of its work.

(8) It is the responsibility of the Contractor to prepare all hazardous waste manifests. The Contractor shall prepare manifests for Government signature when the Government's EPA identification number is used. The manifest shall be submitted 48 hours in advance of the waste being removed. The Environmental Compliance Coordinator (ECC) will review and sign the manifest when the transporter arrives.

(9) Hazardous or dangerous waste shall be recycled to the maximum extent possible. Placing hazardous or dangerous waste in a permitted hazardous waste landfill shall be the last resort. If such a facility is necessary, the Contractor shall dispose of it in compliance with Federal, State and local requirements.

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

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SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. IEEE C57.13, "Requirements for Instrument Transformers"). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: http://www.aci-int.org

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: http://www.aashto.org

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
E-mail: info@ansi.org
Internet: http://www.ansi.org/
Note --- Documents beginning with the letter "S" can be ordered from:

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674
E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 Hoes Lane
Piscataway, NJ 08855-1331
Ph: 732-981-0060
Fax: 732-981-1712
E-mail: customer.services@ieee.org
Internet: http://www.ieee.org

INTERNATIONAL CODE COUNCIL (ICC)
5203 Leesburg Pike, Suite 600
Falls Church, VA 22041
Ph: 703-931-4533
Fax: 703-379-1546
E-mail: webmaster@iccsafe.org
Internet: http://www.intlcode.org

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)
127 Park Street, NE
Vienna, VA 22180-4602
Ph: 703-281-6613
Fax: 703-281-6671
E-mail: info@mss-hq.com
Internet: http://www.mss-hq.com

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209
Ph: 703-841-3200
Fax: 703-841-3300
E-mail: webmaster@nema.org
Internet: http://www.nema.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: http://www.nfpa.org

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)
400 Commonwealth Drive
Warrendale, PA 15096-0001
Ph: 724-776-4841
Fax: 724-776-0790
E-mail: sae@sae.org
Internet: http://www.sae.org

UNDERWRITERS LABORATORIES (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096
Ph: 847-272-8800
Fax: 847-272-8129
E-mail: northbrook@us.ul.com
Internet: http://www.ul.com/

U.S. ARMY CORPS OF ENGINEERS (USACE)

Order CRD-C DOCUMENTS from:

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Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

Order Other Documents from:

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Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: http://www.usace.army.mil/publications
or http://www.hnd.usace.army.mil/techinfo/engpubs.htm

U.S. DEPARTMENT OF TRANSPORTATION (DOT)
400 7th Street, SW
Washington, DC 20590
Ph: 202-366-4000
Internet: http://www.dot.gov

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
CODE OF FEDERAL REGULATIONS (CFR)
FEDERAL SPECIFICATIONS (FS)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: http://www.archives.gov

Order documents from:

Superintendent of Documents
U.S.Government Printing Office
Washington, DC 20402-9325
Ph: 866-512-1800 or 202-512-1800
Fax: 202-512-2250
E-mail: gpoinfo@gpo.gov
Internet: http://www.gpo.gov

PART 2 PRODUCTS

(NOT USED)

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(NOT USED)

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section in conjunction with SECTION 16277 covers the Contractor's responsibilities for shipment, hauling, and site assembly of the transformer as required for temporary storage at the Dworshak Dam Powerhouse, field testing, provision of erecting engineer services, and for Contractor-furnished training of Government personnel in the theory, operation, and maintenance of the power transformer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.13	(1993) Requirements for Instrument Transformers

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Transformer Movement Plan; G, AO

A transformer movement plan detailing movement of the transformer from the railhead in Orofino, Idaho (at the Ahsahka yard) to its final storage location at the Dworshak Dam powerhouse shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.3, "TRANSFORMER MOVEMENT PLAN").

2. Site Delivery Inspection Procedure and Schedule; G, HDC

A transformer site delivery inspection procedure and schedule detailing the step-by-step activity listings and schedule that demonstrates the dependency of one activity on another, shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.5.1, “Site Delivery Inspection Procedure and Schedule”).

3. Transformer Shipping Restriction. G, HDC

The transformer shall not be shipped without written authorization. The site pad must be completed and ready prior to shipping. (see paragraph 3.7)

4. Transformer Site Assembly Procedure; G, HDC

A transformer site assembly procedure detailing the reassembly of the transformer, heated oil filling, interconnections as required for temporary storage, and final field testing shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.8.2, "Transformer Site Assembly Procedure").

SD-06 Test Reports

1. Transformer Oil Field Test Report; G, AO

A transformer oil field test report, showing that the transformer oil meets the requirements of SECTION 16277 (paragraph 2.12.3) prior to filling of the transformer at the Dworshak Dam powerhouse, shall be submitted for approval not later than 48 hours following completion of the tests (see paragraph 3.8.3, "Handling and Installation of Transformer Oil").

2. Transformer Field Test Report; G, AO

A transformer field test report shall be submitted for approval not later than 14 calendar days following completion of the field tests (see paragraph 3.10, "FIELD TESTS").

SD-08 Manufacturer's Instructions

Training Outline; G, AO

A training outline covering the material to be used for performance of the on-site training session, including a schedule, shall be submitted for approval not later than 30 calendar days prior to the completion of the transformer field tests (see paragraph 3.12, "CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL")

SD-09 Manufacturer's Field Reports

1. Impact Recorder Summary Report; G, AO

The impact recorder summary report, including a copy of the impact recorder log, shall be submitted for approval within 24 hours after delivery of the transformer f.o.b. Dworshak Dam powerhouse (see paragraph 3.5.1, "Site Delivery Inspection Procedure and Schedule")

2. Erecting Engineer's Record; G, AO

The transformer manufacturer's erecting engineer's record shall be submitted for approval upon request by the Government, or within 7 calendar days following completion of all site work (see paragraph 3.11, "ERECTING ENGINEER SERVICES”).

3. Site Delivery Inspection Report; G, AO

The site delivery inspection report shall be submitted for approval within 48 hours following completion of the site delivery inspection (see paragraph 3.5, "Site Delivery Inspection Report").

1.4 POINTS OF CONTACT FOR SHIPPING AND SITE ACCESS

The closest railroad access to the Dworshak Dam Powerhouse is a railroad spur provided by the Great Northwest Railroad. Points of contact for coordinating shipping and site access are as follows:

Great Northwest Rail Road
Contact: Rob Thrall
(208) 743-2211

U.S. Army Corps of Engineers
Dworshak Project Site
Staff Electrical Engineer
Greg Vaughn
P.O. Box 48
Ahsahka, Idaho 83520-0148
(208) 476-1209

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 TRANSFORMER SHIPMENT PREPARATION

The transformer equipment, accessories, and spare parts shall be prepared in such manner as to protect them from damage in transit. The Contractor shall be responsible for and make good any and all damages incurred in loading or in transit. It is the Contractor's responsibility to supply units of shipping dimensions and weight that allow for transport from the point of manufacture to the Dworshak Dam powerhouse. Heavy parts shall be securely mounted on skids to facilitate handling. If beams are required to distribute loading on the railcar, their weight and height shall be taken into consideration when determining shipping dimensions and weight, and the beams shall be provided as part of the contract. Any internal blocking or bracing that is to be removed from the transformer at its destination shall be colored bright yellow, and specifically addressed in the Transformer Site Assembly Procedure. Any material to be returned to the vendor after transformer shipment or installation is complete shall be returned at the Contractor's expense, and shall bear identification of material ownership and shipping address. Materials not so marked will be disposed of at the Government's discretion. All crates containing equipment that should be stored indoors shall be marked "STORE INDOORS" in 2-inch high lettering. For items that are required to be shipped and stored in a particular arrangement such as bushings, shall be marked with "THIS SIDE UP" or similar in 2-inch high lettering. . The transformer cooling fans, including

associated mounting hardware, shall be packaged and shipped in separate wooden shipping crates for indoor storage at the Government facility.

3.2 SHIPPING

3.2.1 Preparation for Shipment

The transformer shall be delivered without oil. The tank shall be purged, filled with dry nitrogen or dry air (dew point of -50 degrees-C maximum), under a pressure sufficient to ensure that temperature changes encountered in transit will not result in negative pressures, and then sealed. A pressure gauge shall be installed at the gas connection, and a shipping marker shall be attached near the gas connection showing the absolute pressure, type of gas, temperature, and date the tank was sealed. At time of shipment, a dew point test shall be performed on the gas in the transformer. The dew point temperature and the test method used shall be shown on the shipping marker. Transformers shipped by rail shall be shipped on rail cars equipped with hydraulic draft gear, hydraulic snubbing devices

3.2.2 Impact Recorder

The transformer shall be shipped with a 3-axis digital impact recorder with GPS tracking, such as the Lat-Lon "RoadRider" monitoring and tracking system. The impact recorder shall be mounted on a plate that is part and parcel to the transformer and covered with a shield. The impact recorder shall be inspected before removal for tight securement, in position as loaded, protective cover intact, seals in position, and whether the area the device is secured to is intact, loose, or deformed. Any exceptions to the shipment observed shall be brought to the attention of the COR. The digital impact recorder shall be calibrated to record and transmit impact data greater than 0.75g, and shall also provide timed reports every 4 hours. The impact recorder "real-time" data shall be Internet viewable, and the Contracting Officer shall be provided with the "login" and "password" for site access prior to shipment. Mounting provisions for the impact recorder shall be removed after delivery of the transformer.

3.2.3 Shipment to Dworshak Dam

After completion of factory testing and the transformer has been released for shipment by the COR, the transformer and ancillary equipment shall be prepared for shipment and transported from the Contractor's manufacturing facility to Dworshak Dam. If transported by rail, the Contractor shall off-load the transformer at the rail siding in Ahsahka, Washington. At the rail siding, the Contractor shall off-load the transformer on to truck transport and moved to the Dworshak Dam powerhouse.

3.2.4 Shipment of Transformer Oil

The transformer oil shall be shipped to the job-site in suitable tank trucks. The oil shall remain stored in the trucks at the job-site until the transformer is ready to be filled. The cost of providing and returning the oil tank trucks shall be borne by the Contractor, and shall be included in the contract price. The Government will not be responsible for any charges accruing on oil tank trucks due to untimely delivery.

3.3 TRANSFORMER MOVEMENT PLAN

The Contractor shall be responsible for the transport and movement of the transformer to the Dworshak Dam powerhouse. A transformer movement plan shall be submitted for approval, and shall include the following as a minimum. Government approval of the movement plan does not constitute approval by railroad or transportation authorities.

(1) The method and means of lifting and off-loading the transformer from the railcar (if shipped by rail) and onto a transport truck.

(2) Drawings or detailed maps showing the intended route to be taken by the transporter to the Dworshak Dam powerhouse.

(3) Wheel, axle, outrigger, and track loads of the transport truck, as applicable, and their locations along the route. Axle loading and road loading limitations shall be coordinated with the applicable state and county Departments of Transportation.

(4) The method and means of transformer handling and placement into its final storage location at the Dworshak Dam powerhouse, including equipment, loading plans for equipment, and intended route while at the powerhouse.

3.4 HAULING

The dimensions and weight (without oil) of the largest piece of each unit as shipped by the Contractor shall not exceed that allowed for truck transport and for movement at the Dworshak Dam powerplant. In the event the shipping dimensions or weight of the largest piece exceed those allowed for truck transport or within the powerplant, the unit shall be designed such that its weight and dimension can be safely reduced in the field to that allowed for transport. Any limitations affecting transportation shall not become the basis for claims or damages, or for extension of time for completion of work.

3.5 SITE DELIVERY INSPECTIONS

3.5.1 Site Delivery Inspection Procedure and Schedule

A transformer site delivery inspection procedure and schedule shall be submitted, and shall contain a step by step activity listing and a schedule that demonstrates the dependency of one activity on another. Included in the procedure shall be the persons on each shift responsible for superintendence and safe clearance. Activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included in the plan. An Impact Recorder Summary Report shall be submitted within 24 hours after delivery of the transformer.

3.5.2 Sample Site Delivery Inspection Procedure

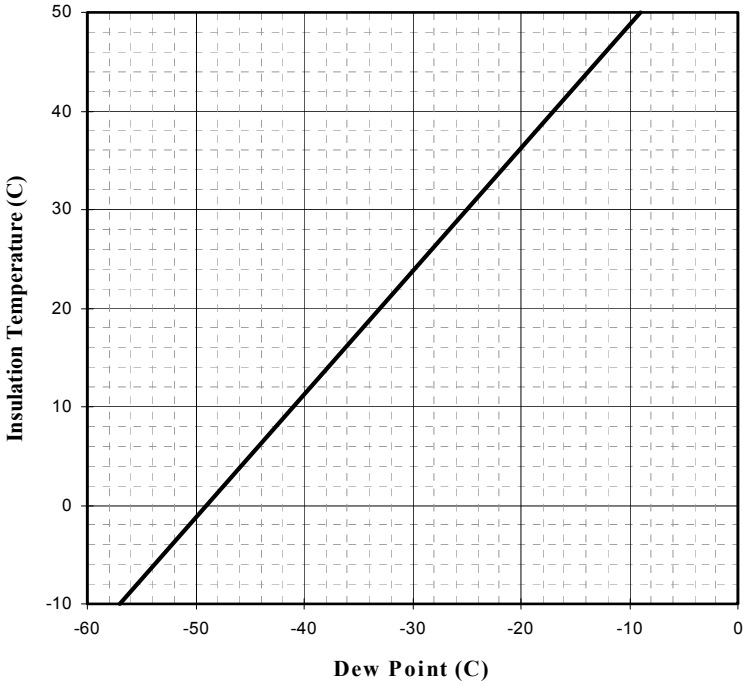
The following outline is based on the expected site delivery inspection and shipping procedure, and is intended to show the scope of the required work. The actual step-by-step procedure submitted shall be applicable to the transformer actually furnished, may differ from the following procedure, and shall list methods of repair and/or retesting if unacceptable results of the inspections are obtained.

(1) Perform an on car external inspection of the transformer and associated equipment for shipping damage, including signs of movement on the transporter, and loose or damaged tie rods.

(2) Check the tank gas pressure by use of a pressure gauge. Tank pressure shall be positive.

(3) Perform a dew point check. The dew point shall not exceed the temperatures for corresponding insulation temperatures, as indicated on the chart below.

DEW POINT LIMITS



(4) Inspect the impact recorder charts in the presence of the COR for any indication of excessive impacts during shipment. If damage due to shipment is suspected, a core insulation test shall be performed. If the transformer fails the core insulation test, recommendations for repair shall be included in the site delivery inspection report.

(5) If shipping damage is suspected, perform an on car internal inspection of the suspect transformer to check for internal damage such as loose coils, broken lead supports, dislodged end insulation, frayed lead insulation, core grounds, or loose nuts or bolts. A temporary cover shall be erected over the transformer, and the manhole covers shall be cleaned before the tank is opened. Prior to performing the internal inspection, the tank shall be purged with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. The duration the inside of the tank is exposed to the atmosphere shall be recorded, and kept to a minimum. Reseal the transformer after the internal inspection has been completed, and repressurize the transformer to 2 psi with dry nitrogen or dry air. Positive pressure shall be maintained during transportation of the

transformer to the project, off loading, and until such time that the tank is breached during assembly. An additional dew point check shall be performed 24 hours after reseal of the transformer.

(6) All inspections listed in (1) through (5), above, shall be repeated after the transformer has been trucked to the Dworshak Dam powerhouse.

3.5.3 Site Delivery Inspection Report

After completion of the transformer site delivery inspection, the Contractor shall submit a site delivery inspection report, based upon the approved procedural outline. The site delivery inspection report shall include, but not necessarily be limited to, the following for each transformer shipped:

(1) Gas analysis and pressure.

(2) Visual inspection log.

(3) Core insulation test results (if required).

(4) Proposed method of repair of any damage incurred during shipment.

(5) Procedure for diagnosis and correction in the event of loss of positive gas pressure during shipment.

3.6 TRANSFORMER DRY-OUT

Notwithstanding any differences from the procedures outlined above, the transformer shall be received by the Contractor at the railhead and subsequently transported to the project site for subsequent assembly by the contractor. It is not anticipated that it will be necessary to dry-out the transformer; however, if gas pressure has been lost during shipment or shipping damage is suspected, this dry-out may be necessary. If it becomes necessary to dry-out any part of the transformer, the Contractor shall perform all such operations as required at no additional cost to the Government.

3.7 UNLOADING

The Contractor shall off-load the transformer at rail siding in Ahsahka, Idaho as noted in paragraph 3.2.3, load it on a truck and move it approximately 1.5 miles, and place it in its permanent storage location which has yet to be determined. In preparation for placement of the transformer by the Contractor, the Government will have prepared a Pad site for the transformer. The transformer shall not be shipped until the Government has given written authorization to ship indicating that the permanent storage site is ready for the transformer to be set.

3.8 SITE ASSEMBLY

3.8.1 General

The Contractor shall be responsible for the assembly, oil filling, and interconnections of the transformer as required for temporary storage, and final field testing. All electrical equipment and supplies, machinery parts, and similar equipment necessary to be stored under cover shall be identified and submitted for approval by the COR. The transformer cooling fans shall not be installed on the radiators for long-term transformer storage. The fans and associated mounting hardware shall remain in their shipping crates and turned over to the Government for indoor storage.

3.8.2 Transformer Site Assembly Procedure

A transformer site assembly procedure shall be submitted for approval, which shall include a step-by-step activity listing and a proposed time line for each specific task. Included in the assembly procedure shall be the procedure for heated oil filling of the transformer under vacuum, with a listing of the equipment to be used. Any activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included. As a minimum, the assembly procedure should include:

(1) Step-by-step assembly of the transformer.

(2) Means for maintaining a slight positive pressure in the transformer tank with the dry nitrogen gas until the start of vacuum filling.

(3) Provide a temporary weather cover over the transformer and purifier. Purge the tank with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. Remove any interior shipping braces. Install and connect the bushings, and cooling radiators.

(4) Hot oil fill the transformer under vacuum to the normal operating level per the manufacturer's requirements.

(5) Test the CT ratio and polarity in accordance with IEEE C57.13, (paragraphs 6.1.4 and 6.4).

(6) Check the operation of the rapid pressure rise relay.

(7) Pressure test the complete transformer with pressure at the top of the tank at 4 psi for not less than four hours with oil at the normal level in the tank. Check for oil leaks or a reduction in pressure which would signify a gas leak.

(8) Field test the transformer per the requirements of paragraph 3.10, “FIELD TESTS”. All field tests to be performed, including their sequence, method, and acceptance criterion shall be included in the assembly procedure.

3.8.3 Handling and Installation of Transformer Oil

The Contractor will be required to provide a high-vacuum type oil purifier for processing the transformer oil under vacuum and heat during filling of the transformer tank after moved to its temporary storage location, in accordance with the site assembly procedure. After filling with oil, the transformer shall be thoroughly dried by vacuum processing with circulated heated oil per the requirements of the approved transformer site assembly procedure. No Government provided power source will be available to the Contractor for this equipment. The oil supplied under these specifications will be handled from the tank truck to the transformer via the high-vacuum purifier. The oil shall be tested upon arrival to the site prior to filling of the transformer. If the tanker truck has separate oil storage sections, each section containing oil shall be tested. The tests shall comply with the requirements of SECTION 16277 (paragraph 2.11.3, "Chemical, Physical and Electrical Characteristics") and a Transformer Oil Field Test Report shall be submitted for approval prior to filling. Any nonconformance with the required oil characteristics shall be remedied, at no cost to the Government, by a process submitted for approval. The Contractor shall provide any temporary oil storage facilities required for handling and processing the transformer oil. The Contractor shall submit an oil spill plan and provide the necessary equipment to contain an oil spill, as required in SECTION 01355.

3.9 TOUCH-UP PAINTING

Equipment damaged or abraded in shipment shall be thoroughly cleaned, and the damaged areas shall be given one coat of primer and one finish coat of paint. All finished surfaces to receive primer on which the factory coating has deteriorated or been damaged shall be cleaned by means of solvents, degreasers, light sanding or polishing with 240 grit aluminum oxide paper or cloth moistened with Kerosene, or other approved means which removes all grease, paint markings, dirt, rust, and other foreign substances. Appropriate measures shall be taken to protect adjacent surfaces and equipment from overspray or paint splatter. The use of wet or dry cloths or paper shall be as approved by the COR on an individual basis. Primer paint and finish coats shall be as specified in SECTION 16277 (paragraph 3.3,)

3.10 FIELD TESTS

After the transformer has been filled with oil, the bushings installed, and assembly of the transformer is complete, but prior to the securing of any external connections to the powerhouse, the Contractor shall, under the supervision of the transformer manufacturer's erecting engineer, perform field tests as approved in the Transformer Site Assembly Procedure. The Contractor shall furnish five certified copies of the Transformer Field Test Report. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The following tests shall be performed on the transformer prior to final acceptance by the Government:

(1) Winding insulation resistance of each winding to ground and between windings (Megger Test).

(2) Power Factor test of each transformer winding.

(3) Transformer Turns Ratio test (TTR) on each tap.

(4) Transformer oil (combustible gas-in-oil).

(5) Power Factor Test of each transformer bushing.

(6) Leakage Reactance Measurement Tests. Leakage reactance measurement tests shall be performed between the high-voltage winding and the low-voltage winding, using the same model test equipment and methods as used in the manufacturing facility. The leakage reactance test results shall not deviate more than 0.5 percent as compared to the factory test reports. Deviations in excess of 0.5 percent shall be explained to the satisfaction of the COR, and may be grounds for requiring an internal inspection of the transformer by the Contractor, at no expense to the Government, to determine the cause.

(7) Sweep Frequency Response Analysis Test. A sweep frequency response analysis (SFRA) test shall be performed, using the same equipment and methods as used during the transformer factory acceptance testing. The proposed SFRA test equipment, setup, and test procedure shall be included in the field test procedures submittal. The SFRA test results for each unit shall be compared with the factory acceptance test "baseline" results, to determine the integrity of the core and winding structure after shipment from the manufacturing facility. The SFRA data obtained during the factory acceptance testing shall be loaded into the test equipment software to facility wavetrace comparisons. Wavetrace comparisons are expected match closely, with little differences between matched scans. Wavetrace comparisons that do not match closely shall be explained to the satisfaction of the COR, and may be grounds for transformer rejection, requiring an internal inspection of the transformer by the Contractor to determine the cause of the deviations, or requiring the transformer to be sent back to the manufacturing facility for repair at no expense to the Government.

3.11 ERECTING ENGINEER SERVICES

The transformer manufacturer's erecting engineer shall be responsible for the transformer, and for the oversight and correctness of instructions given during the assembly and installation of the transformer in preparation for temporary storage. The erecting engineer shall keep an Erecting Engineer's Record of all data taken during site assembly and installation, and shall submit to the Government one copy either on request or on completion of all site work. The erecting engineer shall be responsible for performance of the following work:

(1) Witness and guide off-loading and loading of the transformer at the rail siding, and off-loading from the transport truck at the Dworshak Dam powerhouse.

(2) Witness and guide the hauling of the transformer by truck between the rail siding and the Dworshak Dam powerhouse.

(3) Witness the movement of the transformer at the Dworshak powerhouse into its final storage location.

(4) Witness and guide the assembly of the transformer, including the oil filling process.

(5) Witness and guide the final acceptance testing of the transformer.

(6) Perform training of Government personnel as described, below.

3.12 CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL

Immediately following placement of the transformer into its permanent storage location and completion of all field tests, the Contractor shall conduct a course at the Dworshak powerhouse in the theory, operation, and maintenance of the power transformer. The actual date in which the training is to be performed shall be coordinated with the Dworshak powerhouse personnel and the COR. The course shall include theory of basic circuits, the transformer system trouble analysis, and operations. Particular attention shall be paid to the accessories listed in SECTION 16277, paragraph 2.8, "ACCESSORIES". The course shall be of 4 hours minimum duration for approximately 10 Government personnel. Course material shall include the use of site specific Operations and Maintenance Manuals, to the maximum extent possible. The Government may videotape the training session for future use by the Government. The Contractor shall submit a Training Outline of the material to be covered, and a proposed schedule. In addition to this formal training, the Contractor shall make available during the same day 4 hours of 'one-on-one' training with powerplant personnel, as required.

-- End of Section -

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SECTION 16277

CLASS II POWER TRANSFORMER

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SECTION 16277

CLASS II POWER TRANSFORMER

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section covers the supply of one single-phase generator step-up (GSU) power transformer rated 121,500/162,000 kVA, 500 kV GrdY/288.675 kV high-voltage, 13.8 kV – 13.8 kV low-voltage, Class ONAN/ONAF cooling.

1.2 DESCRIPTION OF WORK

The general arrangement of the existing transformer bays and transformer limiting dimensions are as shown on the drawings. All transformer movement and site work performed at Dworshak Power plant shall be witnessed by the manufacturer's erecting engineer, as required in section 01600. The Contractor shall be responsible for the following:

a. Design, manufacture, test, and deliver one single-phase transformer F.O.B. Destination to Dworshak Power plant.

b. Movement of the new single-phase GSU power transformer to the Spare Transformer Pad, and interconnection to the equipment provided to monitor and maintain the transformer in the ready state as specified in SECTION 01600

c. After movement of the new single-phase GSU power transformer to its Spare Transformer Pad, but prior to interconnection to the Monitoring and maintenance equipment, the Contractor shall reassemble, oil fill, and perform field tests on the transformer as required, herein and as specified in SECTION 01600.

1.3 REFERENCED PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B1.1	(1989; R 2001) Unified Inch Screw Threads (UN and UNR Thread Form)
ASME B1.20.1	(1983; R 2001) Pipe Threads, General Purpose (Inch)
ASME B16.1	(1998) Cast Iron Pipe Flanges and Flanged Fittings
ASME B16.24	(2001) Cast Copper Alloy Pipe Flanges and Flanged Fittings Class 150, 300, 400, 600, 900, 1500, and 2500

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(2004) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 343	(1999) Standard Test Method for Alternating-Current Magnetic Properties of Materials at Power Frequencies Using Wattmeter-Ammeter-Voltmeter Method and 25-cm Epstein Test Frame

ASTM A 718	(1991) Standard Test Method for Surface Insulation Resistivity of Multi-Strip Specimens
ASTM D 923	(1997) Standard Test Method of Sampling Electrical Insulating Liquids
ASTM D 1533	(2000) Standard Test Method for Water in Insulating Liquids (Karl Fischer Reaction Method)
ASTM D 3487	(2000) Standard Specification for Mineral Insulating Oil Used in Electrical Apparatus
ASTM D 4059	(2000) Standard Test Method for Analysis of Polychlorinated Biphenyls in Insulating Liquids by Gas Chromatography

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1	(2000) Standard for Welding Procedure and Performance Qualification

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2003) International Building Code

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.12.00	(2000) Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating transformers
IEEE C57.12.70	(2000) Standard Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.12.80	(2002) Standard Terminology for Power and Distribution Transformers
IEEE C57.12.90	(1999) Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers and Guide for Short-Circuit Testing of Distribution and Power Transformers
IEEE C57.13	(1993) Standard Requirements for Instrument Transformers
IEEE C57.19.00	(1991; R.1997)) General Requirements and Test Procedure for Outdoor Power Apparatus Bushings
IEEE C57.19.01	(2000) Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings
IEEE 693	(1997) IEEE Recommended Practice for Seismic Design of Substations.

MANUFACTURERS STANDARDIZATION SOCIETY (MSS)

MSS SP 70	(1998) Cast Iron Gate Valves, Flanged and Threaded Ends
MSS SP 80	(2003) Bronze Gate, Globe, Angle, and Check Valves

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA AB 3	(2001) Molded Case Circuit Breakers and Their Application

NEMA C57.12.10	(1997) Transformers – 230 kV and Below, 833/958 Through 8333/10,417 kVA Single-Phase, and 750/862 Through 60,000/80,000/100,000 kVA Three-Phase Without Load Tap Changing, and 3750/4687 Through 60,000/80,000/100,000 kVA with Load Tap Changing Safety Requirements
NEMA C80.1	(1994) Rigid Steel Conduit, Zinc Coated
NEMA FB 1	(2003) Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies; Revision No. 1
NEMA ICS 2	(2000) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated Not More Than 2000 Volts AC or 750 Volts DC
NEMA SG 4	(2000) Alternating-Current High-Voltage Circuit Breakers
NEMA WC 70	(1999) Standard for Nonshielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy

UNDERWRITERS LABORATORY (UL)

UL 1	(2000) Flexible Metal Conduit, Tenth Edition
UL 467	(2004) Grounding and Bonding Equipment
UL 514B	(2004) Conduit, Tubing, and Cable Fittings
UL 886	(1994) Safety for Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
UL 1008	(1996; Rev thru Aug 2003) Transfer Switch Equipment

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.502	(2000) Fall Protection Systems Criteria and Practices

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. The following shall be submitted in accordance with SECTION 01330, "SUBMITTAL PROCEDURES", unless otherwise indicated below:

SD-02 Shop Drawings

1. Outline, Assembly and Detail Drawings; G, HDC

Outline, assembly and detail drawings of all equipment to be furnished under the contract, together with final weights of the equipment and overall dimensions, shall be submitted for approval within 90 calendar days after date of award to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. These drawings shall include the following, at a minimum:

a. Transformer nameplate information.

b. Overall dimensions and layout of the assembled transformer, including structural supporting base, jacking locations, lifting

locations, pulling-eye locations, conservator tank, seismic anchoring, and clearances required for untanking or disassembling the transformer, details of gasketed joints, and welded joint details.

c. Locations of all bushings and ancillary equipment including current transformers, valves, devices, gauges, relays, terminal cabinets, radiators and fans, conduit, junction boxes, and automatic transfer switch.

d. Transformer winding configuration diagrams.

e. Schematic and wiring diagrams, and connection diagrams showing terminal block and conductor designations shall be made as seen by an observer of the actual equipment arrangement. Space shall be provided for addition of devices where mounting space exists on the structure.

2. Installation Drawings; G, HDC

Installation drawings as required for the installation of the transformer shall be submitted for approval within 120 calendar days after contract award. Included in these drawings shall be the proposed seismic anchorage system. (see paragraphs 2.1.4.2, "Seismic Anchorage Design")

SD-05 Design Data

1. Descriptive Data; G, HDC

Descriptive data or catalog data of all accessory devices and ancillary equipment provided with the transformer shall be submitted for approval within 90 calendar days after date of award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications.

2. Seismic Anchorage Design Calculations; G, HDC

Design calculations performed and stamped by a qualified civil or structural engineer with professional registration, demonstrating conformance of the transformer seismic anchorage design with the specification requirements shall be submitted for approval within 90 days after date of contract award. (see paragraph 2.1.4.2, “Seismic Anchorage Design.)

SD-06 Test Reports

1. Transformer Factory Acceptance Test Report; G, HDC

The transformer factory acceptance test report shall be submitted for approval not later than 30 calendar days following completion of the factory acceptance tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

2. Bushing Design Tests; G, HDC

The transformer bushing design test reports shall be submitted for approval not later than 30 calendar days following completion of

the tests (see paragraph 3.2.3.1, "Bushing Design Tests"). If certified copies of previously conducted bushing design tests are submitted in-lieu of new test results, they shall be submitted not later than 180 calendar days prior to delivery of the transformer.

3. Bushing Routine Tests; G, HDC

The transformer bushing routine test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.3.3, "Bushing Routine Tests").

4. Bushing Current Transformer Tests; G, HDC

The transformer bushing current transformer test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.3.4, "Bushing Current Transformer Tests").

SD-07 Certificates

1. Transformer Seismic Capability Certification; G, HDC

The transformer seismic capability certification, supported by testing or analysis, shall be submitted for approval within 90 days after date of contract award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. (see paragraph 2.1.5, “Seismic Requirements”)

2. Transformer Oil Certification; G, HDC

Transformer oil certification shall be submitted for approval a minimum of 14 calendar days prior to the start of factory tests. (see paragraph 2.12.1, "Quantity and Transformer Oil Certification").

3. Notification of the Date of Factory Tests; G, HDC

The contractor shall notify the COR, in writing, 21 calendar days in advance of when the transformer will be ready for factory acceptance tests, so that the tests may be witnessed by a Government Representative. If factory testing in a foreign country is proposed, the Contractor shall notify the COR in writing of the preliminary testing dates, not later than 60 days prior to the start of factory tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

SD-08 Manufacturer's Instructions

Factory Test Procedures; G, HDC

The transformer factory test procedures shall be submitted for approval not later than 60 calendar days prior to the start of the factory acceptance tests (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS")

PART 2 PRODUCTS

2.1 TYPE AND RATING

2.1.1 General

The transformer to be furnished under these specifications shall be single-phase, three winding oil-immersed type suitable for outdoor operation. The transformer shall be self-cooled/forced air-cooled type, Class ONAN/ONAF, and shall be of a design that has an established record of satisfactory operation with the type of oil preservation system specified. The dimensions of the transformer shall not exceed the limits shown on the drawings.

2.1.2 Transformer Limiting Dimensions and Equipment Arrangement

The transformer design, configuration, dimensions, and interconnections shall be the same as the existing Westinghouse GSU transformer, as indicated on the Westinghouse Electric reference drawings HAM598-01 and HAM598-02, facilitating the future installation of the transformer as a spare in the existing transformer vaults with a minimum of field modifications. The dimensions of the transformer shall not exceed the dimensions of the existing transformer, as shown on the reference drawings. Particular attention shall be paid to the following to assure correct interface with the Dworshak Powerplant:

(1) Low-voltage bushing throat connections. The location, dimensions, and flanges of the low-voltage bushing throats shall be the same as the existing transformer to assure proper interconnection with the existing isolated-phase bus.

(2) High-voltage and high-voltage neutral bushings. The position and location of the terminals of the high-voltage and high-voltage neutral bushings shall be the same as the existing transformer to assure proper interconnection with the existing terminal connectors.

(3) Control cabinet. The location and position of the transformer control cabinet shall be the same as the existing transformer to assure proper alignment directly above the existing embedded conduit, and allow for proper interconnection.

(4) Structural supporting base. The structural supporting base of the transformer shall allow for placement on the existing transformer pads, as indicated.

2.1.3 Requirements

Except as otherwise specified herein, the transformer, accessories, and spare parts shall conform to the applicable requirements of IEEE C57.12.00, IEEE C57.12.70, C57.12.80 and C57.12.90; and NEMA C57.12.10. Although the rating of the transformer exceeds the rating governed by NEMA C57.12.10, specific requirements included herein referencing NEMA C57.12.10 shall be met.

2.1.4 Ratings and Electrical Characteristics

The ratings and electrical characteristics of the single-phase transformer shall be as follows:

DESCRIPTION	**500 kV TRANS RATINGS**
Continuous ratings, at 65oC, of the high-voltage winding (H) of all taps, kVA	
a. ONAN Rating	121,500
b. ONAF Rating	162,000
Continuous ratings, at 65oC, of the (X) low-voltage windings, kVA	
a. ONAN Rating	66,750
b. ONAF Rating	89,000
Continuous ratings, at 65oC, of the (Y) low-voltage windings, kVA	
a. ONAN Rating	54,750
b. ONAF Rating	73,000
Frequency	60 Hz
Number of phases	1
Rated voltage, kV	
a. High-voltage winding	500GrdY/288.675
b. Each half of the low-voltage winding	13.8
Winding Connections (external to the transformer)	
a. High-voltage winding	Grounded-Wye
b. Low-voltage winding	Delta
Impedance, percent (at ONAN rated current, subject to the requirement of t paragraph 2.1.5.)	
a. At ONAN rated current between the high-voltage winding (H) and the low-voltage winding (X), 66,750 kVA base	15.6
b. At ONAN rated current, between the high-voltage winding (H) and the low-voltage winding (Y), 54,750 kVA base	13.4
c. At ONAN rated current, between the two halves of the low-voltage winding (X and Y), 54,750 kVA base,	30.1
Polarity	Subtractive
Basic Impulse Insulation Levels (BIL)	
a. Line ends of the high-voltage windings, not less than	1425 kV
b. Neutral ends of the high-voltage windings, not less than	150 kV
c. Low-voltage windings, not less than	110 kV
Winding Taps	
a. Taps in low-voltage windings	None
b. Taps (full capacity) in high-voltage windings	
1) Tap '1' (percent of high-voltage rating)	110.0
2) Tap '2' (percent of high-voltage rating)	107.5
3) Tap '3' (percent of high-voltage rating)	105.0
4) Tap '4' (percent of high-voltage rating)	102.5
5) Tap '5' (percent of high-voltage rating)	100.0
Efficiency, percent Minimum efficiency at ONAN rated kVA and 1.0 power factor, with both halves of the 13.2 kV winding equally loaded	99.66
Audible Sound Level, dB Maximum average sound level at rated voltage and frequency, with all cooling fans in operation, as measured in accordance with paragraph 3.2.2.e.	74
Weight, pounds Maximum transformer total weight, completely assembled and oil-filled with all accessories installed	393,700

2.1.5 Seismic requirements.

2.1.5.1 Seismic Requirements for equipment

The transformer to be furnished under this contract shall be constructed and assembled to withstand the maximum seismic forces specified. Contractor shall provide certification supported by testing or analysis stating the seismic capability of the equipment.

2.1.5.2 Seismic Anchorage Design

The seismic anchorage for the 500 kV GSU Transformer shall be designed by the Contractor in accordance with the requirements of this specification. Contractor shall provide anchorage design calculations performed and stamped by a qualified civil or structural engineer with professional registration. Anchorage shall be designed without relying on effects of friction and shall provide a factor of safety of 1.3 against overturning. Existing concrete strength shall be taken as f'c = 3,000 psi. Contractor shall provide recommended anchorage details, including anchorage locations, maximum tension and shear per anchor bolt, and anchor bolt specifications. Detail drawings shall be stamped by the engineer performing the calculations. Support details shall be compatible with a skid mount design as shown in reference drawings DWP-1.4-4/50.

2.1.5.3 Seismic Code Requirements

The seismic design shall be in accordance with Section 1621 Architectural, Mechanical and Electrical Component Seismic Design Requirements of ICC IBC or the provisions in 1997 IEEE 693 Annex D, whichever produces the more adverse seismic effects. For ICC IBC, use Seismic Use Group III, spectral acceleration S_{DS} = 0.214, I_P = 1.50, and z=h=1. For IEEE 693, the seismic qualification level shall be moderate.

2.1.6 Impedance Tolerance

The impedance tolerance shall be limited to a maximum of 3 percent, at the 100% ONAN rated current, to reduce circulating current when installed as a spare in the existing transformer bank.

2.2 THERMAL DESIGN

The temperature rise above ambient temperature of the transformer or parts thereof, when tested in accordance with its ratings, shall not exceed the limits of observable temperature rise for oil-immersed apparatus as stated in IEEE C57.12.00 (paragraph 5.11.1). The winding temperature rise by resistance shall not exceed 65 °C, and the hottest-spot winding temperature rise shall not exceed 80 °C on the tap connections that give the highest losses, with all coolers in operation.

2.3 CORE

The transformer core shall be constructed of high quality, non-aging, cold-rolled, grain-oriented steel especially suitable for the purpose. The core steel laminations shall not exceed 0.011 inch in thickness, and shall be M3 grade equivalent, or better. The use of paper insulation in the core will not be acceptable. Electrical core steel core loss, rms exciting power, rms and peak exciting current, and ac permeability shall be tested in accordance with ASTM Standard A 343. Each roll of sheet steel used shall have the surface insulation resistivity tested in accordance with ASTM Standard A 718. The core shall be carefully assembled and rigidly clamped to insure adequate mechanical strength to support the windings and to prevent shifting of the laminations during shipment, and also to reduce vibration to a minimum under operating conditions. Core joints shall be interleaved. An external bushing for core

grounding shall be provided and be provided with a removable strap between the bushing terminal and the tank wall. The bushing shall be rated for not less than 5 kV and shall be located and labeled to avoid confusion with other bushings. The bushing shall be protected with a removable weatherproof metal cover. The transformer core design and construction methods shall be in such a manner to assure that the average sound level due to operation of the transformer and accessories will not exceed 74 dB at rated voltage and frequency as measured in accordance with IEEE C57.12.90.

2.4 WINDINGS

2.4.1 General

The transformer shall be manufactured with three windings meeting the requirements of paragraph 2.1.4, consisting of one high-voltage winding (H) and dual 13.8 kV low-voltage windings (X and Y). The winding conductors shall be of copper and shall be of a circular coil construction. Consideration shall be given to all factors of service, such as high dielectric and mechanical strength of insulation, coil characteristics, and minimum restrictions to free circulation of oil. Coils shall be made up, shaped, and braced to provide for expansion, contraction, and shrinkage due to temperature changes and aging in service in order to avoid abrasion of insulation and to provide resistance to movement and distortion caused by abnormal operating conditions. Adequate barriers shall be provided between windings and core and between high-voltage and low-voltage windings. End coils shall have additional protection, if required, against normal line disturbances.

2.4.2 Insulation Levels

The transformer shall be designed for BIL of the windings as specified in 2.1.4 and shall be capable of withstanding IEEE Standard dielectric tests, in accordance with paragraph 3.2.2, corresponding to the specified winding insulation levels.

2.4.3 Short Circuit Capability

The transformer shall be capable of withstanding without injury the mechanical and thermal stresses caused by short circuits on the external terminals of any winding or windings, with rated voltages maintained across the terminals of all other windings intended for connection to sources of energy, under the conditions listed in IEEE C57.12.00 (paragraph 7.1.1).

2.5 NO-LOAD TAP CHANGER

The transformer shall be equipped with an external, manually-operated tap changer for changing connections to the taps in the high-voltage windings. Taps will be changed only when the transformer is de-energized. The tap changer control shall be mounted on the transformer tank at approximately 48 inches above the base of the transformer and shall include an operating hand wheel, indicating pointer and dial, and means for locking the tap changer in any desired tap position. The operating hand wheel, if removable, shall be mechanically interlocked with the tap mechanism to prevent its removal when the mechanism is not in a completed tap position. Transmission of motion from operating hand wheel shaft to taps shall be by interaction of rigid members. The contacts shall be capable of withstanding the full short-circuit current of the transformer without injury. The tap changing mechanism shall render it impossible to leave a winding open or short-circuited when the operating wheel is placed in a locked position.

2.6 TANK

2.6.1 Construction

The transformer shall be provided with an oil-tight steel tank, with an oil-tight cover per the requirements of NEMA C57.12.10 (paragraph 5.8). The tank shall be provided with one or more unobstructed manholes in the cover with minimum dimensions of 24 inches by 24 inches, or 24 inches minimum diameter, to afford easy access to the lower ends of bushings, terminals, and the upper portions of the coils. In addition to these manhole covers, a separate manhole cover of 12 inches minimum diameter shall be provided that has an unobstructed "line-of-sight" to the inside bottom of the tank, for future use in ultrasonic oil level monitoring. Suitable guides shall be provided for guiding the cores and windings as they are being removed from or lowered into the tank or for guiding the top section of the tank as it is removed or lowered over the core and coils. The main transformer tank and any attached compartment that is subjected to operating pressures shall be designed and constructed to withstand, without leakage or permanent deformation, an internal pressure not less than 10 psi. The tanks shall be designed and constructed for vacuum filling (essentially full vacuum) in the field. All valves, fittings and piping affected by vacuum filling shall be of correct design and construction for such filling. Auxiliary compartments such as reservoir tanks, when not designed for vacuum filling, shall be so designated, and suitable isolating valves shall be provided. The joints between the tank and cover, and between tank sections shall be welded, and the design of the joint shall prevent weld splatter from entering the inside of the tank. The Contractor shall submit for approval full information covering details of welded joints.

2.6.2 Gasketing

Gaskets between metal surfaces shall be set in grooves or held in position by retainers so arranged that all parts are metal to metal. The gaskets shall be made of a resilient material that will not deteriorate under the action of hot oil and will remain oil-tight. Nitrile and cork-neoprene gaskets are acceptable. Gaskets of cork or neoprene only will not be allowed. Details of proposed gaskets shall be furnished.

2.6.3 Lifting and Moving Facilities

2.6.3.1 Lifting Facilities

Design loads for lifting eyes, lugs, or hooks shall be two times the actual load to allow for possible unequal lifting forces. Safety factor for lifting eyes, lugs, or hooks (using design loads) shall be in accordance with NEMA C57.12.10 (paragraph 5.3.1). Lifting eyes, lugs, or hooks shall positively keep the lifting cable in place even when the cable is slack. The transformer shall be provided with the following lifting facilities:

(1) Lifting attachments on the tank cover.

(2) Adequate means for lifting the core and coil assembly from the tank.

(3) Lifting lugs or hooks on the tank adequate for lifting the complete transformer, including radiators filled with oil.

2.6.3.2 Moving Facilities

Moving features shall be furnished as required for moving the transformer to its final operating location as shown, and shall be in accordance with NEMA C57.12.10 (paragraph 5.3.3).

2.6.4 Valves

The transformer shall be provided with suitable valves, conforming with NEMA C57.12.10 (paragraph 5.1.5), except as noted below, for use in filling, draining, and maintaining the transformer and cooling equipment. All oil valves shall be designed for use with insulating oil and shall hold hot oil without leaking. Threaded connections between the valves and the tank will not be allowed. Valves shall conform to MSS SP 70, Type I or II, Class I; or MSS SP 80, Type II, Class A, whichever applicable. All valves shall be brass or bronze, and flanged. Valves shall be provided for the following:

(1) Upper filter connection. A 2-inch globe type valve shall be located such that it can be used to fill the transformer with oil while the transformer is under vacuum.

(2) Vacuum pump connection. A 3-inch globe type valve shall be located on the tank cover for use in connecting a vacuum pump during the vacuum filling process.

(3) Main drain. A 3-inch globe type valve shall be located at the extreme bottom of the tank for use in gravity draining of the transformer, and shall be connected to the powerplant transformer oil drain piping.

(4) Oil sampling valve. Sampling the oil from the extreme bottom of the tank. The sampling valve shall be ball type, with a threaded cap or plug on the discharge end. This valve may be located at the main drain valve location.

(5) Lower filter connection. A 2-inch globe type valve shall be located at the extreme bottom of the tank.

(6) Tank air vents. Valves shall be provided for venting of the bushing adapters.

(7) Isolation valves. The following isolation valves shall be provided:

(a) Radiators. Valves shall be provided on the tank at the inlet and outlet of each radiator to permit removal without draining the oil from the tank.

(b) Conservator tank. Valves shall be provided for isolation of the conservator tank from the main transformer tank, and for complete gravity draining of the conservator tank oil reservoir.

(c) Rapid Pressure rise relay. Isolating the pressure detector relay.

2.6.5 Connections

All bolts, studs, machine screws, nuts, and tapped holes designed for customer connection shall be in accordance with ASME B1.1. Threads for sizes 1/4-inch to 1-inch, inclusive, shall be NC or UN series. The sizes and threads of all valves, pipe and fittings, conduit and fittings, tubing and fittings, and connecting equipment, shall be in accordance with ASME B1.20.1. Manufacturers' standard threads and construction may be used on small items, which in the opinion of the COR are integrally replaceable, except that threads for external connections to these items shall meet the above requirements.

2.6.6 Steel Pipe and Fittings

Steel pipe shall conform to ASTM A 53, Weight A, Class 2. Dimensions of terminating flanges shall conform to ASME B16.1 and B16.24.

2.6.7 Grounding

Two ground pads shall be provided on the transformer for grounding the tank and base. The locations of the existing transformer ground pad connections are as indicated on the drawings. The grounding provisions shall be in accordance with NEMA C57.12.10 (paragraph 5.5).

2.6.8 Personal Fall Arrest System

The top of the transformer tank shall be covered with a non-slip material, the same color as the tank walls. A fall protection system, consisting of removable safety posts and railing or wire rope, shall be provided. The post mounting shall be designed so as to not collect water. The fall protection system shall be designed to meet the applicable provisions of 29 CFR 1926.502.

2.7 BASE

2.7.1 Steel Supporting Base

The transformer shall be provided with a structural steel supporting base designed for pad mounting without wheels. The structural steel supporting base framework shall be designed so that the centerline of the transformer main drain valve located at the extreme bottom of the tank is located approximately 16-inches above the concrete deck. The transformer structural steel supporting base shall be sized so that it does not span any existing concrete deck expansion joint, as indicated. The base shall be suitable for moving the transformer on rollers or skids when completely assembled and filled with oil, and shall be designed to permit moving the transformer in a direction parallel to either centerline, with suitable pulling eyes provided.

2.7.2 Jack Ports

The transformer base shall be provided with jack ports, bosses, or lugs, to permit jacking the complete transformer filled with oil per the requirements of NEMA C57.12.10 (paragraph 5.3.4), using the hydraulic jacks specified in paragraph 2.15.2. The design loads for jacking bosses or lugs shall be at least two times the actual loads to allow for possible unequal jacking forces.

2.7.3 Center of Gravity

The base shall be so designed that the center of gravity of the transformer, with or without oil as normally prepared for shipment, will not fall outside the base support members for a tilt of the base of 15 degrees from the horizontal.

2.8 ACCESSORIES

2.8.1 General

Dials, indicators, and gages installed on the transformer shall be mounted on the high-voltage side at a height of approximately 60 inches above the base of the transformer, unless otherwise indicated, and arranged for convenient reading standing at the level of the base. The following accessory devices shall be furnished, and shall be included in the price for the transformer. Accessories shall be provided per the requirements of NEMA C57.12.10 (paragraph 5), unless otherwise indicated.

2.8.2 Liquid Level Indicator

The transformer constant-pressure, reservoir tank shall be provided with a magnetic-type liquid level indicator located on the side of the reservoir tank facing the transformer vault opening, equipped with a circuit-closing low-level alarm contact suitable for use with an ungrounded 125 Vdc circuit. The dial

shall be marked to show the 25 degrees-C oil level and the maximum and minimum oil levels.

2.8.3 Liquid temperature indicator

The transformer shall be provided with a dial-type indicating thermometer (liquid temperature indicator) with its sensing element located in the path of the hottest oil. The Thermowell shall include a heating element for use in future oil temperature rise testing. The heating element leads shall be brought down to the transformer control cabinet and terminated on a terminal block. Information shall be included in the Operations and Maintenance Manual regarding the rating of this heating element. The thermometer dials shall cover a range of 0 to 120 degrees-C and shall be equipped with adjustable circuit-closing alarm contacts suitable for use with an ungrounded 125 Vdc circuit.

2.8.4 Winding Temperature Indicator

2.8.4.1 General

One winding temperature indicator (WTI), with associated equipment, for use in remote indication and recording or logging of the temperatures of the transformer phase windings, and for switching in the cooling control circuits, shall be provided for each low-voltage winding. The WTI equipment shall be responsive to the current in the phase winding and to the top oil temperature, shall reflect the approximate hot-spot temperature of the winding, and shall be provided with a means of calibration. The WTI equipment shall include the following::

(1) A current transformer installed in each of the low voltage windings, supplying current proportional to the load.

(2) A closed thermowell located inside the transformer case located in the hottest oil near the top of the tank.

(3) A heating coil in the thermowell energized by the current transformer.

(4) A sensing element located in the thermowell for operation of a dial indicator and four switches.

(5) A resistance temperature detector (RTD) for remote indication of winding temperature.

(6) All necessary wiring and capillary tubing.

2.8.4.2 Dial Indicator and Switches

The WTI shall have three electrically-independent, self-resetting contacts suitable for use on 125 Vdc ungrounded circuits. The contacts shall operate to provide stages of cooling, annunciation and control actions as indicated in paragraph 2.13.4.

2.8.4.3 Resistance Temperature Detectors

The WTI equipment shall include two ungrounded three-wire 100 ohm platinum resistance temperature detectors, which will be used to existing remote temperature recording or logging instruments. The leads from the WTI equipment shall be brought out through the transformer tank in watertight and oil tight conduit fittings. All leads from the WTI equipment shall terminate in the transformer control cabinet. The connecting leads between the RTD elements and control cabinet terminal blocks shall be soldered.

2.8.5 Rapid Pressure Rise Relay

The transformer shall be provided with a relay to detect a sudden rise in oil or gas pressure in the transformer tank, designed to operate on rate of pressure change. The relay shall be insensitive to pressure pulses caused by electrical disturbances such as magnetizing inrush currents or mechanical shocks, but highly sensitive to small arcs which would not ordinarily cause a pressure relief device to operate. Connection to the transformer oil space shall be made through an approved valve. The relay shall have at least one set of 'Form C' contacts suitable for use on a 125 Vdc ungrounded circuit. A seal-in relay suitable for service on a 125V ungrounded DC source shall be provided with the rapid pressure rise relay for use in latching the output relay for initiating a transformer trip. Means shall be provided to manually actuate the sensing mechanism of the relay without exposing the oil to air or gas, draining any oil from the transformer, or injecting any gas or liquid into the oil system.

2.8.6 Pressure Relief Device

2.8.6.1 General

The transformer tank shall be provided with a self-resetting, mechanical-type high-flow pressure relief device to automatically relieve internal pressure and to protect the tank against rupture due to arcing below the surface of the oil. The relief device shall be capable of withstanding full vacuum without rupture or loss of accuracy. This device shall be constructed to minimize oil discharge during operation, and to exclude air and water after it opens. It shall be mounted over the main tank at or above the normal oil level in the tank. It shall be equipped with a visual indicator and an alarm contact suitable for operation on a 125 VDC ungrounded circuit. The pressure relief device shall be a Qualitrol XPRD, or approved equal.

2.8.6.2 Oil Discharge Piping

Oil discharge piping shall be provided for directing the oil discharged from the pressure relief device to the base of the transformer tank. The oil discharge piping outlet shall be positioned approximately 24-inches above the base of the transformer, and be provided with a screen to discourage entry by animals, birds, and insects. The design of the oil discharge piping, including screen and inspection cover details, shall be included in the manufacturer's shop drawings.

2.8.7 Gas and Oil Actuated Relay (Buchholz)

The transformer shall be provided with a gas and oil actuated relay (Buchholz relay) located in the pipe connecting the transformer tank to the constant-pressure, reservoir tank. Pipe-work shall be so arranged that all gas arising from the transformer shall pass into the relay, and the size and arrangement of pipe-work shall conform with the recommendations of the relay manufacturer. The relay shall have the following features:

(1) The relay shall be manufactured of a corrosion-resistant, oil-tight alloy casting, have flanged housing connections, and shall have graduated inspection glass windows that enable the volume of gas and the contact system to be inspected.

(2) Two floats (one for gas accumulation and one for low oil level) and one flap with counterbalance weight for the detection of oil speed.

(3) A push-button for testing the relay electric circuits.

(4) A pneumatic test device

(5) A gas and oil sampling device shall be provided, and mounted on the high-voltage side of the transformer at a height of approximately 48 inches above the base of the transformer.

(6) The relay shall have independent alarm contacts wired back to the transformer control cabinet that close on collection of gas or at low oil level, and tripping contacts that close following an oil surge. Mercury-based contacts will not be acceptable. The normally-open, electrically separate alarm and tripping contacts shall not be exposed to oil, and shall have a rated nominal current of 2A a.c./d.c. and a rated nominal voltage of 240V a.c./d.c.

(7) Operation of the relay shall be immune to seismic disturbances.

2.8.8 Contacts and Devices

The contacts of all relays, gages, and thermometers shall be insulated from ground and shall be of a positive snap-action type. Separate alarm relay devices may be furnished if desired. Alarm contacts shall be suitable for operation on 125 Vdc ungrounded circuits and rated 0.5 amperes (resistive) at 125 Vdc

2.9 BUSHINGS

2.9.1 General Bushing Requirements

The transformer shall have one high-voltage, four low-voltage, and one neutral leads brought out from the tank through bushings as specified below. Bushings of the same voltage and current rating shall be interchangeable and, as applicable, except for the core ground bushing (see paragraph 2.3), conform to IEEE C57.19.00 and C57.19.01. All bushings shall meet the following requirements:

(1) Bushings shall be of recent manufacture and shall be of a type and style currently manufactured by the bushing manufacturer and shall be dimensionally interchangeable with current models of at least one United States manufacturer.

(2) Bushings shall be designed for outdoor service.

(3) The porcelain used in the bushings shall be manufactured by the wet process and shall be homogeneous, free from laminations, cavities or other flaws affecting its mechanical strength or dielectric quality, and shall be well vitrified, tough and impervious to moisture. The glazing of the porcelain parts shall be free from imperfections, such as blisters and burns. The exterior porcelain shell above the mounting flange shall be light grey in color.

(4) Bushings shall be so designed that there will be no stressing of any parts due to temperature changes, and adequate means shall be provided to accommodate conductor expansion.

(5) Bushings shall be gastight and oiltight, and shall seal gastight and oiltight on the transformer tank as applicable.

(6) The power factor of each bushing shall meet the requirements of IEEE C57.19.01, Table 6 as applicable.

2.9.2 High-Voltage and Neutral Bushings

The high-voltage and neutral bushings provided shall meet the requirements of paragraph 2.9.1, shall be designed to withstand the standard withstand test voltages as indicated in Table 1 of IEEE C57.19.01, and shall be tested in accordance with paragraph 3.2.3. High-voltage and neutral bushings shall be of

the condenser type, oil impregnated and oil-filled, and shall be provided with a suitable oil level gage or indicator and an oil drain. The seal shall be maintained by compression spring assemblies. The exterior porcelain shell shall preferably be manufactured in one piece, but may be of the two-module or three-module type construction that provides an oil tight enclosure for the core. If modules are provided, they shall be fitted with suitable oil-proof gaskets and shall be held in compression by concentric spring loading. The power factor test facility on high-voltage bushings shall be provided, and shall be suitable for use with a bushing potential device. The high-voltage and neutral bushings shall be rated as follows:

2.9.2.1 High-Voltage Bushing

(1) Insulation class, kV 500

(2) BIL rating, kV 1550

(3) Minimum current rating, amperes 1600

(4) Creepage distance ..... Light contamination

2.9.2.2 High-Voltage Neutral Bushing

(1) Insulation class, kV 25

(2) BIL rating, kV 150

(3) Minimum current rating, amperes 1200

(4) Creepage distance ..... Light contamination

2.9.3 Low-Voltage Bushings

Low-voltage bushings shall meet the requirements of paragraph 2.9.1 and IEEE C57.19.01, and shall be tested in accordance with paragraph 3.2.3. They shall be of the oil-impregnated condenser type, the exterior porcelain shell above the mounting flange shall be formed in one piece, and they shall be designed for vertical mounting. Viton gaskets shall be used for the installation of all low-voltage bushings. The low-voltage bushings shall be rated as follows:

(1) Insulation class, kV 25

(2) BIL rating, kV 150

(3) Minimum current rating, amperes 7,500

(4) Thermal rating, degrees Celsius temperature rise 125

2.10 BUSHING-TYPE CURRENT TRANSFORMER

Two multi-ratio bushing–type current transformers shall be provided on the transformer high-voltage bushing, one 1200:5 and one 2000:5 for relaying service. All bushing-type current transformers shall conform to the requirements of IEEE C57.13 and NEMA SG 4, and shall have a minimum ANSI relaying accuracy classification of C400. the continuous thermal rating factor shall be 1.33, based upon a 30 degree Celsius average ambient air temperature. One current transformer shall be provided on each low voltage winding for temperature indication. No current transformers are required for the high-voltage neutral bushings.

2.11 BUSHING POTENTIAL DEVICES

One bushing potential device in a weatherproof cabinet shall be installed on the transformer for operation from the capacitance taps on the 500 kV high-voltage bushings. The devices shall be Class A, in-phase type, conforming to NEMA SG 4, and rated as follows: The installed PBA is a Westinghouse type PBA2. However a PBA2 per manual indicates it is not designed for voltages up to 500Kv. Contractor to utilize a GE type KA-108, ABB type PA-2 or equivalent and to ensure it is compatible with the existing systems installed and working on the existing transformers.

(1) Circuit voltage, V: 288,680/500,000 Y

(2) Secondary voltage (main), V: 115 and 66.4

(3) Secondary voltage (aux), V: 115 and 66.4

(4) Frequency, Hz: 60

(5) Wattage: 195*

* since there was no burden shown in the PBA table for 500 Kv a linear plot shows it would be approximately 195 at 500 Kv.

2.12 OIL

2.12.1 Quantity and Certification

The Contractor shall furnish all oil required to fill the transformer and oil-filled bushings to the proper operating levels as well as the oil required for factory tests. Prior to shipment of the transformer, certification shall be submitted stating that the oil furnished for placing the transformer in service will meet the requirements specified below.

2.12.2 Type of Oil

The grade of insulating oil furnished shall be produced from a predominately naphthenic base crude petroleum, shall be new, and shall be specifically prepared and refined for use in electrical equipment as an insulating and cooling medium. Except for the oxidation inhibitor, the insulating oil shall be free from additives of every kind, either natural or synthetic.

2.12.3 Chemical, Physical, and Electrical Characteristics

The insulating oil provided shall be tested in accordance with, and shall meet the test requirements of, ASTM D 3487, Table 1, Type II prior to shipment. In addition to the requirements listed in ASTM D 3487 Table 1, the insulating oil shall contain no Polychlorinated Biphenyls (PCBs) as tested in accordance with ASTM D 4059, and the water content shall not exceed 20 parts-per-million (ppm) as tested in accordance with ASTM D 1533. The Government, at point of delivery, may draw samples in accordance with ASTM sampling standards, for testing to determine whether the oil meets the specifications. Oil so tested and failing to meet the requirements will be removed and replaced by, and at the expense of, the Contractor.

2.12.4 Sampling

Samples for testing shall be obtained as specified in ASTM Standard D 923.

2.12.5 Testing

Chemical, physical, and electrical tests shall be conducted by the Contractor in accordance with the test methods listed in ASTM D 3487, Table 1. Five certified copies of the test reports shall be furnished to the COR prior to shipment of the oil.

2.13 OIL PRESERVATION SYSTEM

2.13.1 General

The transformer shall be provided with a nitrogen blanket over oil in the transformer preservation system. The rest of the system consists of interconnecting tubing from Nitrogen tanks that maintain that blanket and provides makeup nitrogen if the oil contracts preventing fresh air from coming in. Nitrogen is lost when the oil expands to a set point thus always keeping higher pressure on the oil, over atmosphere.

2.13.2 Inert-Gas for Transformer Processing

Cylinders of nitrogen gas necessary for shipping, installing, flushing and charging the transformer shall be furnished by the Contractor. The nitrogen and cylinders shall conform to IEEE C57.12.00 (paragraph 6.6.3). Freight on returnable cylinders shall be paid by the Contractor and shall be included in the price bid for the transformer.

2.13.3 Air Cell

The oil reservoir shall contain an air cell arranged to prevent direct contact between the oil and air. The air cell material shall be nylon-impregnated nitrile rubber designed for long life and for service in contact with hot oil. The air cell shall be vented through a weather-tight breather provided with a suitable desiccant. The desiccant containers shall be located on the transformer tank at a height of approximately 48 inches above the base of the transformer so that the desiccant material can be replaced, refilled, and maintained without removing the transformer from service.

2.13.4 Liquid Level Gauge

The liquid level indicator for the reservoir (see paragraph 2.8.2) shall be arranged to close the set of low-level alarm contacts when the oil level becomes too low or the air cell sinks. The liquid level gauge shall be situated so that it can be read when facing the high-voltage side of the transformer.

2.14 COOLING EQUIPMENT

2.14.1 Radiators

The transformer shall be provided with a sufficient number of radiators to cool the oil properly. The radiators shall be located as indicated on the drawings, and so located on the tank to insure uniform circulation of the oil through the windings. The radiators shall be constructed of steel tubes or elements welded into steel headers. All welding shall be on the outside of the radiators such that there will be no crevices in which water might collect. The welding and fittings shall be smooth, both inside and out, so as to present no obstruction to the flow of oil inside and to facilitate cleaning and painting on the outside. The radiators shall be designed to withstand essentially full vacuum to permit filling the transformer under vacuum with radiators in place and radiator valves open. Valves shall be installed on each connection to the main tank so that radiators may be removed for repairs without taking the transformer out of service. Provisions shall be made for draining and venting the radiators. Lifting eyes means shall be provided for handling the radiators.

2.14.2 Forced-Air Equipment

Suitable forced-air equipment shall be provided so that the continuous forced-air-cooled capacity of the transformer will be at least 133.3 percent of the self-cooled rating without exceeding the allowable temperature rise specified in paragraph 2.2, “THERMAL DESIGN”. The forced-air equipment shall include vertical-draft propeller type fans with guards and direct-connected motors, and a rigid housing with venturi openings, and louvers or baffles, if needed, to direct the air stream against the radiator and to prevent recirculation of discharged air. The propellers shall be balanced cast aluminum and shall provide adequate air delivery with low noise level. The fan motors shall be of splash proof or totally-enclosed construction suitable for continuous service and shall have individual thermal overload protection. The fan motors shall be provided with antifriction bearings having a L10 rating of 40,000 hours minimum. The transformer forced-air equipment shall be designed to assure that the average sound level due to operation of the transformer and accessories with all fans in operation will not exceed 74dB at rated maximum load, as measured in accordance with IEEE C57.12.90.

2.14.3 Power Supply Equipment

The power supply for fan motors will be Government-furnished, 120/208V, 3-phase, 4-wire, 60 Hz, as indicated on the contract drawings. One 3-pole, 600 V, molded-case circuit breaker of proper current rating, and conforming to NEMA AB 3 shall be provided in the control cabinet for each supply circuit (primary and alternate).

2.14.4 Cooling Control Equipment

All necessary protective and control equipment for the fan motors shall be furnished and installed in the transformer control cabinet for the transformer, or included in the controls of the Transformer Temperature Monitor. The control equipment shall be fully automatic, and designed to start and stop the fan motors as the transformer winding temperature requires. A “LEAD-LAG” selector shall be furnished to select which cooling units will operate as the first cooling group, and which cooling units will be controlled automatically to provide the additional cooling capacity, as indicated. The controls shall be designed to de-energize the fans in the event of a transformer failure resulting in fire. Provision shall be made so that it will not be necessary to shut down the entire cooling equipment when removing any cooling group for repairs. Control equipment shall consist of molded-case air circuit breakers and contactors, as required, and shall conform to NEMA ICS 2. Contactors shall be NEMA Size 1 minimum. Auxiliary relays, if required, shall have a contact rating designation of A600 or better. Additional circuit breakers for branch circuit protection of fan circuits shall be provided as required. Air circuit breakers shall be molded-case type, rated not less than 20A, conforming to NEMA AB 3. All cooling control equipment shall be designed per the applicable requirements of the National Electrical Code.

2.14.5 Automatic Transfer Switch

2.14.5.1 General

The control equipment shall include an Automatic Transfer Switch (ATS) to automatically transfer all 120/208 Volt transformer equipment from the primary supply to the secondary supply upon loss of primary power. The ATS shall be mounted on the transformer tank adjacent to the transformer control cabinet, and shall be an ASCO model 940, or approved equal. The ATS shall be UL 1008 listed, electrically-operated contactor type capable of automatically transferring from a primary source to an available alternate source. The ATS shall be manufactured and tested in accordance with applicable requirements of IEEE C37.90.1, NEMA ICS 1, NEMA ICS 2 and UL 1008. The ATS shall be designed and manufactured to prevent stops in an intermediate or neutral position during

transfer by the use of electrical actuators and mechanical stored-energy mechanisms. An ATS designed and manufactured to effect transfers by a walking-beam or a similar device to engage handles of circuit breakers to accomplish transfer between power sources are unacceptable. Each pole of the double-throw ATS shall have separate arcing contacts of a nonwelding type. All rating data shall be shown on detail drawings and shall equal or exceed those specified. Switches shall be adequately rated for the application indicated and shall have the following characteristics:

(1) Voltage: 120/208V volts

(2) Number of Phases: 3

(3) Number of wires: 4

(4) Frequency: 60 Hz

(5) Number of poles: 3

(6) Continuous current rating of not less than 70 amperes

(7) Nonwelding contacts rated for use with feeder overcurrent devices indicated on the drawings and available fault current up to 22,000 amperes RMS symmetrical.

(8) Protection against transfer to a dead source ATS.

2.14.5.2 Automatic Operation

The automatic transfer switch shall transfer and remain connected to the alternate power source upon failure of the primary source. The switch shall remain connected to the alternate power source regardless of the conditions of the primary power source. If the alternate source fails and the primary source is available, the transfer switch shall automatically retransfer to the primary source.

2.14.5.3 Indicating Lights

The front of the enclosure shall be equipped with two Light Emitting Diode (LED) indicating lights each with a nameplate as designated on the drawings. A green light shall illuminate when the power is received from primary source, and a red light shall illuminate when the power is received from the secondary source CQ02.

2.14.5.4 Testing

In addition to the factory tests required in paragraph 3.2, each completely assembled ATS unit shall be subjected to operational tests. Tests performed shall demonstrate that the operational sequence of each ATS unit conforms to the requirements of the specifications with regard to operating transfer.

2.14.6 Elapsed Time Meters

Hour-indicated elapsed time meters shall be provided, as indicated, for each fan cooling group. The time meters shall be of the non-reset type, and have 6-digit registers with counter numbers at least 1/4-inch high. White numbers on black backgrounds shall provide hour indication with the last digit in contrasting colors to indicate tenths of an hour. The enclosure shall be 3-1/2 inches square, and dust resistant. The operating voltage shall be 120 volts ac.

2.15 TRANSFORMER CONTROL CABINET, WIRING, AND CONDUIT SYSTEMS

2.15.1 General

The transformer shall be provided with a control cabinet and a separate detachable conduit entry box mounted in a readily accessible location, as indicated on the contract drawings. The location shall be such that the existing conduit stubout for transformer external control circuits shown on the drawings can be used for the same purpose with this transformer. The control cabinet and detachable conduit entry box shall be of rugged weather-proof Type 304 stainless steel construction with provision for locking. If electrically isolated from the transformer tank by vibration isolators, the control cabinet shall be provided with a grounding jumper to the transformer tank. External conduit and cable terminal connections for wiring to the transformer control cabinet shall be to the detachable conduit entry box which will facilitate easy disconnection of wiring for moving the transformer without pulling the external cables back into the conduits and without disconnection of the conduits. The conduit entry box enclosure shall contain the terminal blocks for terminations, and a lockable latch-type door for access. These enclosures shall remain unpainted, and “piano-hinges” will not be acceptable for cabinet doors. Devices mounted on the back of hinged panel doors that are not visible from the panel door fronts, shall be mounted such that the device mounting screws do not penetrate the panel doors. Device nameplates shall be made of engraved-aluminum with black lettering.

2.15.2 Wiring

2.15.2.1 General

All enclosures and devices shall be completely wired to designated terminal blocks for connection to external devices. The Contractor's standard cables and methods of cable terminations may be used for wiring and terminations performed at the factory, however, splices will not be permitted. Any wiring extending beyond the control cabinet and conduit entry box shall be terminated at 600 V terminal blocks with 30 A capacity. Special attention shall be given to terminal wiring arrangements on the terminal blocks to permit individual conductors of each external cable to be terminated on adjacent terminal points. The wire (terminal point) designations used on the Contractor's wiring diagrams may be according to the Contractor's standard practice; however, wire and cable designations for identification of external circuits shall correspond with Government’s designations, as indicated on the contract drawings.

2.15.2.2 Control Panel and Shop Wiring

Wiring for factory assembled control panels or assemblies of electrical components on the transformer shall be of a cross-linked-thermosetting-polyethylene insulated type conforming to the requirements of NEMA WC 70 (paragraph 4.1.13). The insulation shall be moisture and heat resistant, suitable for conductor temperatures not exceeding 90 degrees-C normal operation, and shall also pass the Type A vertical flame test requirements of NEMA WC 70 (paragraph 6.8). All wires shall be single conductor stranded coated annealed copper, insulated for not less than 600-volt service. Conductors shall be Class B or Class C stranding, except hinge wires shall be Class K stranding. Hinge wires shall be used between stationary panels and swing doors, and shall be formed in wire loops that will provide rotation around the longitudinal axis of the conductors. Type SIS wire may be used in the control panel, however, Type SIS wire shall not be used in conduit runs unless specifically approved for such uses. Conductor size shall be not less than No. 12 AWG, except for current transformer secondary leads, which shall not be less than No. 10 AWG. All connections to device terminal studs or blocks shall be made with pressure-indented terminals. The completed installation shall conform to all requirements of the National Electrical Code.

2.15.3 Conduit Systems

All wiring from the transformer devices and accessories listed below shall be run in rigid galvanized conduit conforming to NEMA C80.1. Wiring shall be connected to terminal blocks in the cabinet, with the exception that short lengths of cables suitable for outdoor use will be permitted between individual device terminals and nearby connection boxes. All conduit runs installed by the Contractor shall be terminated at devices or connection boxes and at the terminal cabinet in standard pipe-threaded couplings or nipples integral with or welded to the device or cabinet. Similar pipe-threaded connections shall be provided on the terminal cabinet for attaching incoming conduit. Other conduit connections shall be made with cast metal boxes and outlet fittings having threaded outlets and gasketed covers. The conduit systems shall be electrically continuous and all threaded joints shall have the threads coated with an approved conductive joint compound. No running threads on conduit will be permitted. Rigid steel conduit shall conform to NEMA C80.1 and shall in addition, be zinc coated (galvanized) both inside and outside. Fittings for rigid metal conduit shall conform to NEMA FB 1. Cast aluminum boxes with cast covers shall be used conforming to the requirements of UL 514B and UL 886. Short lengths of watertight flexible conduit may be used for connections to auxiliary devices, subject to approval. Flexible conduit shall conform to UL No. 1, shall have a hot dipped galvanized steel core, copper ground wire and a waterproof extruded PVC cover. Fittings for conduit shall be threaded and conform to NEMA FB1, UL 467, and UL 514B, and shall be constructed to ensure positive grounding.

2.15.4 Terminal Blocks

2.15.4.1 General

Terminal blocks for control signal and current transformer secondaries shall be removable and of binding, fillister or washer-head screw type, or stud type with contact and locking nuts. Each terminal shall be not less than No. 10 in size, having length and space for connecting at least two No. 12 AWG conductors to each terminal. Terminal blocks shall be provided to terminate all external cables and shall contain at least four spare terminals or 10 percent, whichever is greater. White or other light colored marking strips, shall be provided for circuit designation. Each connected terminal of each block shall have the circuit designation or wire number placed on the marking strip with permanent marking fluid. Two reversible or spare marking strips shall be furnished with each block.

(1) Control Signal Type. All terminal blocks for control wiring, shall be sliding link disconnect molded or fabricated type with barriers, rated not less than 600 volts with 30 ampere capacity.

(2) Current Transformer Secondaries Type. Short circuiting type terminal blocks shall be furnished for all current transformer secondary leads as shown in the contract drawings and shall have provisions for short-circuiting together all leads from each current transformer without opening any circuit. Short-circuiting the terminals of only one current transformer shall not short-circuit the terminals of any other current transformer.

2.15.5 Lighting and Convenience Receptacles

One 120 V lamp with 750 lumens minimum output, complete with housing, wiring, and switch shall be provided in the control cabinet for illumination. If an incandescent lamp is provided, the lamp shall be rated 75W, be industrial grade, and the switch shall be 20 A, T-rated. The lamp shall be placed or shielded so that direct light will be thrown on the control panel only. A 125

V, 3-wire, 20 A, GFCI type receptacle, shall be provided in the control cabinet. A 120 V thermostatically-controlled electric space heater of adequate rating shall be provided in the cabinet to prevent condensation when the outside temperature is as low as -20 degrees Celsius.

2.15.6 Auxiliary and Interposing Relays

Auxiliary and interposing relays, with the exception of time delay relays, shall be of the self-reset type and shall be provided with convertible contacts. They shall be provided where device contact ratings, which interface with external powerhouse equipment, do not meet the contract requirements of this paragraph. Relay coils and contacts shall be suitable for continuous operation in 125 Vdc or 120 Vac circuits, as required. Contacts shall have a 10 A continuous current rating. The single-contact inductive load interrupting capacity shall be not less than 1.0 A for 125 Vdc, or 6 A for 120 Vac. Relays used in 125 Vdc circuits shall be rated for operation between 90 and 140 Vdc. Relay coils used in 125 Vdc circuits shall be designed to operate at 140 Vdc continuously. Relays shall meet the requirements of NEMA ICS 2, designation A 600.

2.15.7 Control and Instrument Switches

Control and instrument switches shall be of the rotary switchboard type with handles on the front and the operating mechanisms on the rear of the panels. Each switch shall be provided with ample contact stages including spare contacts where indicated to perform the functions of the control system. Contacts shall be self-aligning and shall operate with a wiping action. A positive means of maintaining high pressure on closed contacts shall be provided. Compression springs or pivoted joints shall not be depended upon to carry current. The covers or plates on the switches shall be readily removable for inspection of contacts. The switches shall be suitable for operation on 600-volt ac or 250 volt dc circuits, shall be capable of satisfactorily withstanding a life test of at least 10,000 operations at rated current, and shall be capable of continuously carrying 20 amperes without exceeding a temperature rise of more than 30 degrees C above ambient. The single-breaking inductive load interrupting rating shall be not less than 1.5 A for 125 Vdc, or 10 A for 120 Vac. Each switch shall be provided with an escutcheon clearly marked to show each operating position. The switch identifications shall be engraved on the escutcheon plates and on separate nameplates.

2.16 JACKS, AND TOOLS

The Contractor shall furnish the following equipment for assembling, disassembling, and moving the transformer. The equipment shall remain at Dworshak Power Plant and shall remain the property of the Government after completion of the work:

2.16.1 Jacks

Not less than four heavy duty hydraulic jacks suitable and adequate to safely lift the complete transformer, including radiators, filled with oil shall be provided. Each jack shall be equipped with a pressure gage and a pressure relief device.

2.16.2 Tools

A complete set of any special tools, wrenches, or equipment that may be necessary or convenient for assembling, disassembling and moving the transformer, and also any other accessories and/or appliances which are necessary for satisfactory operation or servicing thereof and are not specified herein, shall be provided.

2.17 SPARE PARTS

All spare parts shall be duplicates of the original parts furnished and interchangeable therewith. The following spare parts for the transformer shall be furnished:

(1) Two complete sets of all gaskets needed to seal all openings into the transformer tank at the cover, manholes, handholes, openings for accessory devices, openings for high, low, and neutral bushings, and pipe connections for radiators. One complete gasket set to be used for the cover when untanking is performed, which will ensure that no weldment material will enter the transformer tank during the welding process.

(2) Six complete refills for the oil expansion tank desiccant breathers for one transformer.

2.18 NAMEPLATES

2.18.1 Transformer Nameplate

The transformer shall be provided with a cast bronze or stainless steel nameplate conforming to the requirements of IEEE C57.12.00, Table 10. In addition to the requirements of Table 10, the nameplate shall also include the following: date of manufacture, manufacturing plant location and address, Government contract number, the amount of pressure and vacuum the tank will withstand, and the transformer X/R ratio. The nameplate or an adjacent nameplate shall also include the following information for each current transformer furnished: the accuracy class, the primary and all secondary ampere ratings, and identification of the terminals to which the current rating applies. Each nameplate shall be fastened to the transformer in proper locations, with either corrosion-resistant finished round head screws, or on screw posts with corrosion-resistant finished nuts.

The following transformer identification shall be provided:

(1) The core and coil assembly structuaral framework shall be stamped with the serial number of the transformer.

(2) The transformer serial number shall be stamped into the tank immediately adjacent to the transformer nameplate with characters approximately 1/2 inch high.

(3) The location of the centers of gravity (c.g.) of the completely assembled transformer filled with oil, and the heaviest piece for shipment without oil, shall be permanently marked on two adjacent sides of the transformer tank and shall be appropriately identified "c.g. complete" and "c.g. for shipment".

(4) A diagram plate shall be provided to show the various sling and lift positions required for proper lifting of the core and coil assembly and for the completely assembled transformer, with and without oil. It shall also indicate the untanking height and whether the transformer may be lifted when filled with oil.

2.18.2 Device Nameplates

Each item of equipment mounted in the transformer control cabinet shall be provided with an engraved nameplate. Nameplates shall be made of anodized aluminum approximately 1/8 inch thick or stainless steel, engraved and provided with black lettering. Each nameplate shall be fastened to the panels in proper locations, with either corrosion-resistant black finished round head screws, or on screw posts with corrosion-resistant black finished nuts.

PART 3 EXECUTION

3.1 ELECTRIC WELDING

3.1.1 Preparation for Welding

Members to be joined by welding shall be cut accurately to size and, where required, shall be rolled or pressed to the proper curvature and dimensions. The edges of the members shall be sheared, flame-cut, or machined to suit the required type of welding and to allow thorough penetration. The cut surface shall expose sound metal free from laminations, surface defects caused by shearing or flame-cutting operations, or other injurious defects. The surfaces of plates to be welded shall be free from rust, grease, and other foreign matter for a distance of at least ½ inch back from the edge of the weld.

3.1.2 Welding

All welding shall be performed by the electric-arc method, by a process which will exclude the atmosphere from the molten metal and, where practicable, under procedure control using automatic machines. After being deposited, welds shall be cleaned of slag by shot blasting, unless otherwise approved, and shall show uniform sections, smoothness of weld metal, feather-edges without overlap, and freedom from porosity and clinkers. Visual inspection at the edges and ends of welds shall indicate good fusion with the base metal. Particular care shall be taken in aligning and separating the edges of members to be joined by butt-welding so that complete penetration and fusion at the bottom of the joint will be assured. All pinholes, cracks, and other defects shall be repaired by chipping or grinding to sound metal, and rewelding. Where fillet welds are used, the members shall fit closely and shall be held together during welding. The welding rods used for manual welding shall be of the heavily coated type and shall be suitable for the position in which the welding is performed.

3.1.3 Welding Process

The Contractor shall have established and recorded a specification of the welding process proposed for use and, if required, shall furnish a copy of such process specification, together with certified copies of reports of results of tests made in accordance therewith. The qualification of the welding process shall be in accordance with the requirements of AWS B2.1, and the minimum requirements of the tests shall be as stated in the appendix thereto.

3.2 FACTORY ASSEMBLY AND TESTS

3.2.1 General

The transformer shall be completely assembled and adjusted at the factory, and shall be subjected to the manufacturer's routine shop tests and also other tests as specified below. All parts shall be properly marked and identified for ease of assembly in the field. The Contracting Officer’s Representative (COR) shall witness all tests required herein unless waived in writing, and no equipment shall be shipped until it has been released for shipment by the COR. The Government shall be notified of the date of the tests sufficiently in advance of the scheduled test date so that arrangements can be made for the Government Quality Assurance Representative to be present at the tests. The factory tests, including test equipment, test methods, measurements, and computations, shall be in accordance with the applicable requirements of IEEE C57.12.00, C57.12.80 and C57.12.90, unless otherwise specified, and shall be submitted for approval. All routine tests required by the referenced standards shall be made and reported whether specifically required by these specifications or not. Except where otherwise specified in the Standards, all measurements and tests involving alternating voltage shall be made with 60-Hz sine-wave voltage. The Contractor shall furnish five certified copies of all test reports, including oscillograms and complete data on all tests. The witnessing representatives of the Contractor and the COR shall sign reports of

witnessed tests Cost of performing tests shall be borne by the Contractor and shall be included in the unit prices for the items of the Bid Schedule

3.2.2 Power Transformer Tests

All routine and design power transformer tests as indicated in IEEE C57.12.00, Table 19 shall be performed. In addition to these tests, the following tests and specific test requirements shall be performed:

3.2.2.1 Transformer Tank and Radiators

The transformer tank and radiators shall be tested for leaks when filled with oil. The test pressure shall be less than that of the pressure relief setting of the pressure relief device, subject to approval, and shall be maintained for at least 4 hours. The test may be constructed simultaneously with the radiators attached to the tank, or each bank of radiators may be tested individually. When separate tank compartments are furnished for parts of the tap changer, each such compartment shall be subjected to both internal and external pressures of 10 psi for 30 minutes without leaking. The tank wall surfaces shall be checked for hot spots during the heat run tests. The tank wall hot-spot temperature rise shall not exceed 70 degrees-C for any transformer while operating at 100 percent of its rating.

3.2.2.2 Impulse Tests

Oscillograms shall be taken of surge voltages during all impulse tests and of neutral current during the full-wave impulse tests. The impulse tests shall be made by direct application without 60-Hz excitation. Lightning impulse tests shall be performed on neutral terminals. The oscillograph shall be adjusted to give the same deflection on reduced-voltage and full-voltage impulse waves to facilitate comparison of the oscillograms. Comparisons shall also be made of the consecutive chopped-wave impulse oscillograms. Oscillographic comparison traces shall be printed, and provided in the certified test report. Any deviation in voltage or neutral current wave shape between reduced-voltage and full-voltage full-wave tests, shall be explained to the satisfaction of the COR or it will be considered cause for rejection of the transformer.

3.2.2.3 Induced Voltage Test With Partial Discharge Measurements

(1) During the 7,200-cycle test, the corona level, excluding background noise, shall not exceed 250 microvolts at the full test voltage. Any variation in corona intensity before and after application of full 7,200-cycle test voltage shall be explained to the satisfaction of the COR.

(2) It is recognized that sizable corona readings during tests are likely to occur from causes external to the transformer itself, such as corona in the high-voltage test circuit, noise from shop equipment, other tests, and radiation or induction pickup through air between the measuring circuit and the high-voltage test equipment. All reasonable precautions shall be taken to minimize such external interference, and the Contractor shall demonstrate that this corona is in no event internal to the transformer by sample tests showing the difference in characteristics between corona under oil and corona in air. It is entirely permissible to utilize special shielding or over insulated bushings to minimize the effects of bushing corona.

(3) During the one-hour test, the corona level shall not exceed 100 microvolts at the full test voltage.

(4) All records, meter readings, and data taken during the above described tests, together with a diagram of the circuit employed, shall be incorporated in the certified test report.

3.2.2.4 No-Load Tap Changer Test

The completely assembled no-load tap changer shall be subjected to ten complete tap changing cycles (end-tap to end-tap) to demonstrate that all linkages, contacts, and indicating mechanisms are properly assembled and aligned and free from excessive slack, deformation, or fragility.

3.2.2.5 Audible Sound Level Test

The transformer's sound level shall not exceed the value specified in paragraph 2.1.3, "Ratings and Electrical Characteristics". If the sound level exceeds the specified limit, the Contractor shall modify the transformer as required to reduce the sound level to the specified level, and the sound level test repeated. The abatement technique used to reduce the tested sound level to the guaranteed sound level shall be subject to approval of the Contracting Officer.

3.2.2.6 Leakage Reactance Measurement Test

The transformer shall have leakage reactance measurement tests performed between the high-voltage winding and the low-voltage winding, for use as baseline data for future testing. Voltage, current, and phase angle measurements shall be recorded, and the leakage reactance calculated. The proposed leakage reactance test equipment, setup, and test levels shall be included in the factory test procedures submittal.

3.2.2.7 Switching Impulse Test

(1) The Transformer shall have a switching impulse test in accordance with IEEE C57.12.90 paragraph 10.2. This test consists of applying or inducing a switching impulse wave between each high-voltage line terminal and ground with a crest value equal to the specified test. The test serious shall consist of one reduced voltage transient at 50-70 percent of specified test level followed by two full voltage transients at the specified test level using either positive or negative polarity waves, or both.

(2) The switching impulse voltage wave shall have a crest value in accordance with the assigned insulation level, subject to tolerance of +/- 3 percent and shall exceed 90 percent of the crest value for at least 200 microseconds. The actual time to crest shall be greater than 100 us, and the time to the first voltage zero on the tail of the wave shall be at least 1000 microseconds. See saturation solution in IEEE C57.12.19 if first voltage to zero is less than 1000 microseconds.

(3) Test is successful if no sudden collapse of voltage is indicated on the oscillograms. Successive oscillograms may differ, however because of the influence of magnetic saturation on impulse duration.

3.2.2.8 Sweep Frequency Response Analysis Test

The transformer shall have a sweep frequency response analysis (SFRA) test performed, for use as baseline data for future testing. The equipment to be used for performance of this test shall be Doble Model M5100B, or approved equal. The proposed SFRA test equipment, setup, and test procedure shall be included in the factory test procedures submittal.

(1) Test Equipment. The excitation source for the SFRA test shall generate a sinusoidal waveform at a constant magnitude over a 20 Hz to 2 MHz frequency range, to allow for consistent measurement of the transfer function across the frequency range. Successive measurements shall be logarithmically spaced at a maximum of 5 percent of the previous measurement, to assure a clear definition of the waveform shape across the frequency range. The test set shall be capable of measuring from 0 to –80 dB, or lower, over the frequency range. The test system should

provide a 50 Ohm characteristic impedance for consistency between different test systems. Test leads shall consist of coaxial cables of the same length.

(2) Test Connections. All windings shall be tested as indicated below, for each tap position.

SINGLE-PHASE, THREE WINDING TRANSFORMER			
TEST #1	***TEST #2**	****TEST #3**	**TEST #4**
H1 – H2	H1 – H2	H1 – H2	H1 – X1
TEST #5	**TEST #6**	**TEST #7**	**TEST #8**
H1 – Y1	X1 – X2	Y1 – Y2	X1 – Y1

* Indicates short circuit test with X1 and X2 shorted together
** Indicates short circuit test with Y1 and Y2 shorted together

(3) Data Format. The SFRA software data files shall be submitted along with the transformer test report. The test report data shall be viewable in Microsoft Excel format, and shall include:

(a) Frequency
(b) Magnitude
(c) Phase
(d) Tap positions for each test
(e) Previous tap position for neutral tap test
(f) Relevant nameplate data
(g) Test set information (make, model, calibration)

(4) Data Interpretation. SFRA testing produces traces which provides information related to the physical geometry of the test specimen. The factory SFRA tests performed on the transformer creates baseline data for use in future testing, and helps in recognizing obvious manufacturing defects, such as open circuits, short circuits, winding deformations.

3.2.2.9 Combustible Gas-In-Oil Analysis

Samples of the transformer insulating oil shall be taken, and combustible gas-in-oil analysis tests shall be performed as follows. Identity of samples and results of analyses shall be included in the certified test report.

(1) After oil-filling of the transformer, and prior to the performance of any transformer factory acceptance tests.

(2) Prior to the performance of temperature rise testing.

(3) After completion of all transformer factory acceptance tests.

3.2.3 Bushing Tests

Bushing tests shall be performed in accordance with IEEE C57.19.00 and IEEE C57.19.01 (2000) for high-voltage and high-voltage neutral bushings, and IEEE C57.19.01 (1991) for low-voltage bushings. Any bushing that fails to pass all tests to which it is subjected will be rejected. The Contractor shall submit, without additional cost to the Government, five certified copies of all Bushing Test Reports.

3.2.3.1 Design Tests

Bushing design tests shall be performed on one bushing of each type provided in accordance with IEEE C57.19.00 (paragraph 7.2), unless these tests have previously been performed on bushings of the same manufacture, design, type, and rating as those being provided within 5 years of the date of this contract,

in which case the requirements for repeating these design tests will be waived and certified copies of the test results of satisfactory tests of this kind shall be furnished. If any bushing given the impulse tests fails to pass any of the tests, then all bushings of the same type and rating shall be subjected to the impulse tests at no additional cost to the Government.

3.2.3.2 Bushing Withstand Test Voltages

The bushings shall be tested per the applicable requirements of IEEE C57.19.01, Table 1.

3.2.3.3 Routine Tests

Each new bushing provided shall be subjected to the routine tests in accordance with IEEE C57.19.00 (paragraph 7.4).

3.2.3.4 Bushing Current Transformer Tests

Each bushing current transformer shall be given routine tests in accordance with IEEE C57.13 (paragraph 4.7.2), including a low-frequency dielectric test of the secondary of 2,500 V to ground for one minute. Induced potential tests shall be made at the full required voltage and for the full required duration corresponding to the test source frequency. Each current transformer shall be checked for proper nameplate and polarity markings, and after installation on the power transformer it shall be given a polarity check and ammeter ratio check to ensure correct installation. The Contractor shall furnish, without additional cost to the Government, five certified copies of the following data:

(1) Typical excitation curves for each turn ratio.

(2) Typical ratio correction factor curves for each turn ratio.

(3) The resistance of the secondary winding at 75 °C, including the approximate resistance of the secondary leads from the transformers to the terminal blocks in the terminal cabinet.

3.3 FACTORY CLEANING AND PAINTING

3.3.1 General

All interiors and exteriors of the tanks, enclosures, cabinets, and other metal parts which are not galvanized or of corrosion-resistant material and are exposed to oil or weather shall be thoroughly cleaned and painted. Cleaning shall be by degreasing and abrasive blasting or other means to remove all grease, scale, corrosion, and foreign substances.

3.3.2 Interior Surfaces

All interior surfaces of the main transformer tanks shall be given at least one priming coat and one finish coat of oil-resistant paint or enamel. The interior color shall be white.

3.3.3 Exterior Surfaces

All exterior surfaces shall be given a primer and two finish coats of pigment paint in the factory. The paint shall be epoxy ANSI No. 70 gray color, applied over a properly prepared, primed surface. The dry film thickness of the primer shall be a minimum of 1.5 mils, and that of the epoxy a minimum of 3.5 mils. One gallon of paint, from the same batch used on the transformer, shall be supplied with the transformer for touching up. With prior approval, other comparable paint type may be used.

3.3.4 Machined Surfaces

All machine-finished or bright surfaces shall be thoroughly cleaned, coated with a suitable, easily removed, corrosion-resistant compound, and wrapped or otherwise protected from damage in shipment.

3.4 SHIPMENT, HAULING, AND SITE ASSEMBLY

The transformer equipment, accessories, and spare parts shall be prepared for shipment f.o.b. Dworshak Dam Powerhouse, inspected, moved into its final operating storage location, re-assembled and tested per the requirements of SECTION 01600.

- END OF SECTION -

SECTION J3

LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

LIBBY DAM SPARE TRANSFORMER

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DOCUMENT No.	DESCRIPTION
J3-A	Drawing Index
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ATTACHMENT J3-A

DRAWING INDEX

230 KV Spare Transformer,
Libby Dam, Kootenai River, Montana

DRAWING NUMBER	SHEET NUMBER	TITLE	REVISION NUMBER	DATE
LDP-5.6-0-0/1	1	Project Location and Vicinity Maps		31 MAR 05
LDP-5.6-0-0/2	2	Index of Drawings		31 MAR 05
LDP-5.6-6-9F24/1	3	Transformer Control and Schematic Diagrams		31 MAR 05
LDP-5.6-6-9F24/2	4	Transformer Control Cabinet External Connections		31 MAR 05

REFERENCE DRAWINGS

Reference drawings provided show conditions at time of construction. These drawings are furnished for information only and the Government does not warrant that conditions will be exactly as shown. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation.

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV. NO.	DATE
		Westinghouse – Transformer Shop Drawings		
---		230 KV Transformer Nameplate	As-Built	11 FEB 77
ABM 986-01		Transformer Outline – Plan View	8	10-1-74
ABM 986-02		Transformer Outline – Elevation View	9	1-9-75
ABM 986-04		Transformer Control Schematic Wiring Diagram	4	9-26-74
ABM 986-05		Transformer Control Connection Wiring Diagram	4	7-14-75
ABM 986-30		Customer’s Cable Arrangement (External)	4	3-17-93
232C294		Westinghouse Type “OS” Condenser Bushing Outline	4	4-4-73
234C226		Westinghouse Type “RJ” Bushing Outline	As-Built	11 Feb 77
770C960		Westinghouse Type “O” Bushing Outline	4	1-2-73

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV. NO.	DATE
		General Electric		
0124C3399		One-Line and Phasing Diagram Generators 1-4	1	23 JAN 74
0203A4796		Transformer Connection		6 MAY 74
P.L.0203A4796		Parts List for Transformer Connection		MAY 74
0161C5526		Drilling for Transformer Terminal Flange	3	1974
0623E0340		Arrangement, Isolated-Phase Bus	3	10-74
0623E0341		Arrangement, Isolated-Phase Bus	3	1974
		Government		
LDP-1-4-2/21		Plan El. 2148.0 Mono's 20-26	E	2 DEC 74
LDP-1-4-3/9		Plan El. 2131.5 & 2148.0 Mono's 19 and 20	B	1 JUN 73
LDP-1.6-4-2/1		General Plan		Unknown
LDP-1.6-4-2/2		Transverse Section – Bay 5		1 SEP 86
LDP-1.6-4-2/3		Plan El. 2131.5		1 SEP 86
LDP-1.6-4-2/4		Plan El. 2148.0		1 SEP 86
LDP-1.6-4-2/5		Concrete Outline, Wall Details Above EL. 2148.0		1 SEP 86
LDP-1-6-1A0/2		Conduit and Cable Numbering System		7 JAN 72
LDP-1-6-1E1/4		Embedded Conduit & Grounding, Service Area & Transformer Deck., Main Unit Bays 1 & 2 EL 2148.0	E	7 APR 78
LDP-1-6-1E21/1		One-Line Diagram, SU1 & SU2	3	11 MAR 04
LDP-1-6-1F1/3		Service Area & Transformer Deck., Main Unit Bays 3 and 4, EL 2148.0	F	7 APR 78
LDP-1-6-1G1/3		Embedded Conduit & Grounding, Service Area & Transformer Deck., Main Unit Bays 5 & 6 EL 2148.0	F	16 AUG 76
LDP-1-6-1H1/3		Embedded Conduit & Grounding, Service Area & Transformer Deck, Main Unit Bays 7 & 8 EL 2148.0	E	7 APR 78
LDP-1-6-7A21/1		Grounding System, Line Diagram	A	30 MAR 78

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV. NO.	DATE
LDP-1-6-9A21/1		Main One Line Diagram		12 MAY 04
LDP-1-6-9E21/1		One-Line Diagram, Units 1-4	3	12 MAY 04

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Attachment J3-B

SECTION C3

DESCRIPTIVE/SPECIFICATIONS/WORK STATEMENT

1.1 DESCRIPTION OF WORK

This section covers the technical specifications for the supply of equipment described in The Schedule, together with all accessories and spare parts specified therein. The work described within these specifications shall include, but not necessarily be limited to the following:

(1) Design, manufacture, and factory test one three-phase generator step-up power transformer for Libby Dam rated 192,000/256,000 kVA, 230 kV GrdY high-voltage, 13.2 kV-13.2 kV low-voltage, Class ONAN/ONAF cooling, furnish jacks and tools, and furnish spare parts. (SECTION 16277)

(2) Deliver the transformer f.o.b. Libby Dam, offload the transformer, movement of the transformer to the permanent storage location, assemble the transformer as required for long-term storage, oil fill the transformer, perform field tests, provide services of a manufacturer's erecting engineer, and provide training to Government personnel. (SECTION 01600)

(3) Perform work required to comply with site operations and safety and health provisions. (SECTION 01010)

(4) Perform work required to comply with environmental protection. (SECTION 01355)

1.2 SPECIFICATIONS

Technical specifications of Solicitation No. W912DW-05-R-0009, covers the detailed requirements for the equipment and services listed in the Schedule and below.

SECTION	TITLE
01010	CONTRACTOR'S SITE OPERATIONS
01270	MEASUREMENT AND PAYMENT
01306	OPERATIONS AND MAINTENANCE DATA
01330	SUBMITTAL PROCEDURES
01355	ENVIRONMENTAL PROTECTION
01420	SOURCE OF REFERENCED PUBLICATIONS
01600	TRANSFORMER SHIPMENT, HAULING, AND SITE ASSEMBLY
16277	CLASS II POWER TRANSFORMER

1.3 EXISTING CONDITIONS

See Exhibit 1 for views of existing Libby Dam Project features included as Attachment J3-C.

1.4 DEFINITIONS

(1) Wherever in the specifications, or upon the drawings, the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription" of the Contracting Officer is intended, and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by" or "acceptable to" or "satisfactory to" the Contracting Officer unless otherwise expressly stated.

(2) Where "as shown", "as indicated", "as detailed", or words of like import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provided complete in place", that is, "furnished and installed". (FAR 52.236.21(b) and (c)).

(3) Wherever in these specifications or upon the drawings, the words "Contracting Officer" (CO) or "Contracting Officer's Representative" (COR) are used, it shall be understood to also mean "Government" unless otherwise expressly stated.

(4) Wherever in these specifications the acronym "GQAR" is used, it shall be understood to mean "Government Quality Assurance Representative", unless otherwise expressly stated.

(5) Wherever in these specifications the work "weekend(s)" is used, it shall be understood to mean "Saturday, Sunday, and Federal Holidays", unless otherwise expressly stated.

-- End of Document --

SECTION 01010

CONTRACTOR'S SITE OPERATIONS

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(NOT USED)

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(NOT USED)

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SECTION 01010

CONTRACTOR'S SITE OPERATIONS

PART 1 GENERAL

1.1 GENERAL INFORMATION

This SECTION covers the general requirements applicable to specific Contractor's operations or equipment for work performed on site.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by basic definition only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

AASHTO	American Association of State Highway Transportation Officials
DOT	Manual on Uniform Traffic Control Devices For Streets and Highways

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Loading Plan; G, AO

A minimum of 30 calendar days prior to on-site work (see paragraph 1.14, "CRANES AND HEAVY EQUIPMENT").

2. Contractor's Work Supervisor(s) Qualifications; G, AO

Qualifications and identification of Contractor's agent(s), a minimum of 10 calendar days prior to the start of site work (see paragraph 1.18.1, "Contractor's Work Supervisor(s)").

3. Scaffolding, Ladder, Stairway or Other Access Schemes; G, AO

A minimum of 30 calendar days prior to their installation and use (see paragraph 1.24, "SCAFFOLDING").

4. Site Work Schedule; G, AO

Site work schedule, a minimum of 10 calendar days prior to the start of site work and updated weekly (see paragraph 1.26, "SITE WORK SCHEDULE").

1.4 WORK AREAS AND ACCESS

1.4.1 Access Roads, General

No new access roads are required. Any Contractor caused damage to existing roadways or Project grounds that are used for access purposes shall be repaired and the surface shall be restored to its pre-damaged condition less normal wear. The Contractor shall comply with all requirements of the State and County authorities for use of existing roadways, such as traffic regulations, load limits, etc. The Contractor shall not block both lanes of the Project roads. If one lane of a roadway used by the Public is blocked, the Contractor shall provide the necessary safety markers, based on the visibility, to control traffic. The Government Quality Assurance Representative (GQAR) shall be notified in advance of any blockage. The Government will make the final determination on whether adequate traffic control measures have been taken.

1.4.2 Access By Government Personnel

Clear access shall be maintained for Government personnel and equipment through all work areas.

1.4.3 Contractor's Staging Area and Employee Access

The Contractor's staging area shall be mutually determined between the Contractor and the GQAR. The job-site office may be in the staging area. The project areas off-limits to Contractor personnel will also be designated. Salespersons or personnel seeking employment will not be permitted inside the powerhouse. Signs may be erected outside the powerhouse containing instructions for personnel seeking the Contractor. The content and location of the signs shall be approved by the GQAR prior to erection.

1.4.4 Government Roadways

The access road to the Libby Dam powerhouse is FR-228, located approximately 13 miles east of Libby, Montana, off State Road 37. The transformer deck areas and roadways leading to the Libby Dam powerhouse are load limited to HS-20-44 AASHTO loading. Prior coordination with the GQAR is required for any vehicles in excess of this capacity.

1.5 VEHICLES

1.5.1 Use of Private Vehicles

Private vehicles of the Contractor and Contractor's employees shall enter and leave the project on the west side of the Kootenai River, using FR-228. Parking of private vehicles shall be restricted to the areas designated by the Government. Parking spaces for approximately 5 privately owned vehicles will be available in a designated area near the Project Office at the main entrance to the Project.

1.5.2 Identification of Vehicles

All Contractor-owned vehicles shall display permanent identification of such size and color to allow Government personnel to identify the vehicle.

1.5.3 Access By Government Personnel

Access shall be maintained for Government personnel and equipment through all work areas.

1.6 PROJECT SECURITY

The Libby Dam powerhouse is not open to the public. An Employee Identification and Control Procedure shall be submitted for approval for identification and control of employees entering or leaving the project. The security of the Contractor's property and items furnished under this contract, until items are accepted by the Government, are the Contractor's responsibility whether stored inside or outside the powerhouse.

1.7 PLANT AND EQUIPMENT LIST

A complete list of all plant and equipment, exclusive of shop equipment, to be used on the project shall be furnished at the Contractor/Government Coordination Meeting. The lists shall include rented equipment as well as lease-purchase or sale-leaseback equipment, dates equipment is assigned to or removed from the project, dates deadlined for repairs and returned for use, and adequate identification or description of each item of equipment including manufacturer's name (abbreviated), model number, manufacturer's serial number, year of manufacture, and Contractor's assigned serial or record number.

1.8 EXISTING FACILITIES

1.8.1 Sanitation Facilities

The Contractor may use the restroom facilities located on El. 2148.00 off the Visitor's Lounge at Monolith 23. Failure of the Contractor's personnel to keep Government restrooms neat and orderly will result in denial of continued use. Sanitation facilities furnished by the Contractor shall be in accordance with EM 385-1-1, and shall be located outside the powerhouse at locations coordinated and approved by the GQAR. The Contractor shall provide freeze protection during the months October through March to prevent any spillage.

1.8.2 Elevators

Contractor personnel may use the hydraulic elevator located at the Bay 8 end of the powerhouse, at Monolith 28. All Powerhouse elevators are used for Government personnel and equipment transport, and no freight elevators exist at the Libby Dam powerhouse. The elevators shall not be used to move equipment and material that interferes with personnel use. Any Contractor caused abuse or damage of the Powerhouse elevators will result in denial of continued use, and any needed repairs will be charged to the Contractor.

1.9 UTILITIES

1.9.1 Government Furnished Utilities

All utilities that are required for use in performance of the work under this contract shall be Contractor-furnished except as noted below:

(1) Water. All reasonable amounts of non-potable water will be made available from existing outlets. Contractor shall freeze proof all outdoor water systems being used in his operations during the winter months; October through March.

(2) Electricity. Electric power in the area may be obtained from the following existing sources :

(a) 120-volt, 1-phase, 20-amperes (three outlets located in the spare transformer vault).

(b) 480-volt, 3-phase 30-amperes (outlet located in the adjacent transformer bank T3 vault).

1.9.2 Temporary Utility Connections

All utilities provided by the Government shall be at no cost. Care shall be exercised in conserving all Government-furnished utilities. Extension cords shall be Contractor-furnished. All temporary utility connections shall be subject to approval. The location of all power lines and all temporary connections for electricity shall be coordinated with the GQAR. All temporary circuits and devices shall be provided, connected, and maintained and removed prior to final acceptance. Ground fault protection for all circuits used shall be Contractor-furnished.

1.9.3 Telephone

The Contractor shall be responsible for furnishing all telephone service needed by him on the job site. The Project telephone system will not be available to the Contractor. There is no Cellular phone service available at the Libby Dam area.

1.10 CONTRACTOR'S MISCELLANEOUS STRUCTURES

The building of structures, the erection of tents or other forms of protection, will be permitted only at such places as the Government shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a satisfactory manner. Temporary Contractor facilities provided during Construction shall be removed upon satisfactory completion of the last unit's operational tests.

As a minimum the area shall be left looking "broom clean" and at least as clean as before the structure placement.

1.11 SAFE CLEARANCE PROCEDURES

The Libby Dam project personnel use a Safe Clearance System, entitled "Station Standing Order No. 1", to ensure continuity of service and safety to personnel and equipment. Any work performed which requires taking the Project's operating equipment out of service will be done only after a formal clearance is obtained by the GQAR through the Libby Dam Control Room Operators with 48-hour minimum notice. Contractor personnel shall not violate clearance. Any violation of Safe Clearance Procedures will be grounds for removal of the offender(s). The Libby Dam Project HAZARDOUS ENERGY CONTROL PLAN is included herein as Attachment J3-D.

1.12 DAILY CLEANUP AND DISPOSAL

All debris resulting from the work, such as waste metalwork, packing cases, scrap lumber, oil and grease spills, and other debris shall be collected, removed, and disposed of off-site at least once per week. The Government's trash cans, dump boxes and other containers shall not be used. Liquid waste shall not be disposed of in powerhouse drains. All costs of removing debris shall be incidental to the work, and no separate payment will be made therefore.

1.13 STORAGE OF EQUIPMENT AND MATERIALS

Storage of equipment and materials will be permitted only in designated staging areas. A minimum access space of three feet shall be maintained between the Contractor's stored items and the existing powerhouse equipment.

1.14 CRANES AND HEAVY EQUIPMENT

1.14.1 Contractor Crane Safety

Contractor's cranes and equipment furnished for this work shall conform with all applicable OSHA requirements and referenced EM 385-1-1 in Section I, clause ACCIDENT PREVENTION including ALT1. Contractor shall submit a lifting diagram addressing such issues as lift, trim, maximum load, maximum wind speed, lifting radius and all other applicable information required by EM 385-1-1 and OSHA as part of the Loading Plan.

1.14.2 Contractor Crane Testing

All Contractor cranes shall be tested in accordance with EM 385-1-1 prior to use on the project and the tests shall be witnessed by the GQAR. Forty-eight hours notice of the test, excluding weekends and federal holidays, shall be given by the Contractor.

1.14.3 Contractor's Cranes and Heavy Equipment

A Loading Plan, which includes the planned method of transportation and operation of Contractor provided cranes and other heavy equipment to be used in the performance of this contract, shall be shall be submitted for government approval and coordinated with the GQAR. This shall include the type, size, loading, and placement of outriggers of all cranes or heavy equipment and the proposed transportation routes and work areas to be used

on the project. Operation of heavy equipment adjacent to existing structures shall be avoided when possible.

1.14.4 Movement of Equipment and Materials by the Contractor

The Contractor shall provide all cranes, rigging, lifts, operators, and other necessary means to move equipment or material as required to pursue and complete the work whether owned by the Government or by the Contractor unless otherwise specifically mentioned. This includes but is not limited to the unloading and loading of equipment and material.

1.14.5 Use of Government Cranes

Government cranes will not be available for the Contractor's use.

1.15 DAMAGED EQUIPMENT OR ABNORMAL CONDITIONS

The GQAR shall be informed immediately upon finding any damaged equipment or other abnormal conditions involving additional work in which the Contractor believes he has no responsibility. The failure or abnormality shall not be disturbed until witnessed. Any damage or abnormal conditions not reported as specified above but discovered at a later date, shall be corrected at the Contractor's expense.

1.16 PROTECTION OF MATERIAL AND WORK

Materials, supplies, tools, equipment and Government property (including all tools, equipment, and special devices supplied by the Contractor and to be turned over to the Government at the end of the Contract) shall be protected and preserved in accordance with manufacturer's recommendations. If material, equipment, supplies, and work performed are not adequately protected, such property may be protected by the Government and the cost thereof will be charged to the Contractor or deducted from any payment due.

1.17 DRAWINGS AND MANUALS

Any additional existing drawings and manuals required for the work that are not included herein will be available for viewing at the The Libby Dam Project Administration Building, during normal project day shift working hours, from 6:30 am to 5:00 PM, Monday through Thursday. Drawings and manuals shall not be removed from the office. However two copies of available technical data and drawings not included in the reference drawings will be made at no cost to the Contractor within five calendar days, after the request for such copies has been made.

1.18 CONTRACTOR'S WORK SUPERVISOR AND PERSONNEL

1.18.1 Contractor's Work Supervisor(s)

At least one full-time employee of the Contractor shall be available at the worksite anytime other Contractor or subcontractor personnel are working on the site to supervise and direct the work specified herein. Supervisor(s) shall be present at the site during transformer assembly and installation, and shall be responsible for providing complete and correct direction of all installation work. The supervisor(s) shall be responsible for following the Government's Safe Clearance Procedure, paragraph 1.11. The supervisor(s) shall keep all as-built drawings current and provide copies upon completion

of the work. The supervisor(s) shall be fluent in the spoken and written English language. The supervisor(s) shall have been engaged in similar generator step-up power transformer installation field work, as is specified herein, for a minimum of three years, and shall have performed this work at a minimum of two different facilities. The Contractor's Work Supervisor(s) Qualifications, experience, a verifying contact, name and phone number shall be submitted for at least two such facilities.

1.18.2 Contractor's General Personnel

(1) General. The Contractor shall prepare and revise whenever organizational changes occur, a project organization chart reflecting at least those positions described herein and defining their work relationships, etc. The Contractor shall maintain a complete organizational chart of all positions that will be working on the project. All personnel employed by the Contractor shall be fully qualified in their respective fields to render the services necessary. The Contractor's organizational plan shall be maintained in the CQC Plan and submitted upon request by the GQAR.

(2) Identification of Contractor's Employees. The Contractor shall be responsible for furnishing to each employee at the powerhouse and for requiring each employee at the powerhouse to display such identification as approved and specified below. All Contractor personnel, prior to engaging in work on project premises, shall either be issued an identification card by the Contractors or agree to provide their driver's license as I.D. upon request. If the Contractor so decides to furnish I.D. cards to all employees, the card must include the following information:

Name of Contractor
Name of Employee
Birth date
Weight
Hair color
Eye color
Recent photo

All prescribed identifications shall be returned immediately to the Contractor upon release of any employee. The Contractor shall include a list of all Contractor employees, which includes their titles and who will be working on the project. This listing shall be revised and resubmitted when personnel changes occur. When required by the Government, the Contractor shall obtain and submit fingerprints of all persons employed to work at the Libby Dam Project.

1.19 PROTECTION AND RESTORATION OF EXISTING FACILITIES

Existing facilities shall be protected whether or not shown on the drawings. Upon completion of the work, existing facilities, not included as a portion of the work, shall be left in a condition equal to the original condition prior to the contract. Costs for repair and restoration of any facilities shall be considered to be incidental to and included in the contract price.

1.20 CARE OF DRAINS

Existing powerhouse floor drains including the unwatering drains and transformer cell drains shall not be used for disposal of any solid material and or any liquids other than clear water. The Contractor shall clean Contractor-obstructed drains. Costs incurred in the cleaning and clearing of plugged drains, shall be borne by the Contractor.

1.21 WORK BY THE GOVERNMENT CONCURRENT WITH CONTRACTOR WORK

The Government will limit interference with the Contractor's work to the maximum reasonable extent and the Government and Contractor shall coordinate as necessary.

1.22 NOISE CONTROL

Noise control and noise levels shall conform to requirements set forth in the appropriate regulations, including EM 385-1-1, Section 05.C, 29 CFR 1910.95, 29 CFR 1926.52 and .101. The most conservative requirement shall govern.

1.23 BARRICADES AND DANGER, DETOUR AND WARNING SIGNS

1.23.1 Barricades, and Danger and Detour Signs

The Contractor shall provide, erect, and maintain barricades, red lights, danger signals, and detour and other signs; provide watchmen; and take precautions for the protection of the work and the safety of the public. Powerhouse galleries, floors, Project roads, etc. obstructed or closed to traffic shall be protected by barricades. Obstructions shall be continuously illuminated day and night. Lanterns or flares shall illuminate warning signs day and night. The signs, signals and barricades shall comply with EM 385-1-1 SECTION 08, 29 CFR 1910.145 and 29 CFR 1926 SUBPART G.

1.23.2 Warning Signs

Warning signs shall be erected 500 feet in advance of any place on the project where operations interfere with the use of a road by traffic. Warning signs shall conform to the standards established in Part IV of the DOT "Manual on Uniform Traffic Control Devices for Streets and Highways".

1.24 SCAFFOLDING

Scaffolding, ladder, stairway, or other access schemes proposed for use shall be submitted for approval, including type, layout, and connections. Approved anti-slip surface material shall be installed on scaffolding platforms. Scaffolding shall comply with EM 385-1-1.

1.25 SITE WORKING HOURS

1.25.1 Government Project Personnel Working Hours

The scheduled working hours of the Project staff are Mondays through Thursdays from 6:30 a.m. until 5:00 p.m. Fridays, Saturdays and Sundays are non-work days. Crews and staff do not work on Federal Holidays. All Project support required by the Contractor shall be scheduled during the Project staff working hours.

1.25.2 Contractor's Working Hours

The Contractor's desired working hours are between 6:30 a.m. and 5:00 p.m., Monday through Thursday. The schedule of work hours, shifts and days of the week shall be coordinated with the GQAR. Notification of any proposed changes of the schedule of regular work hours, overtime work hours, and shifts of work crews and personnel at the site shall be coordinated with the GQAR.

1.26 SITE WORK SCHEDULE

A Site Work Schedule shall be submitted and shall include major and minor work elements and stages of the work. These documents shall be updated and submitted to reflect the actual work elements and progress and changes in the schedule that are anticipated in the future.

1.27 SITE INVESTIGATIONS AND CONDITIONS AFFECTING THE WORK

The Contractor shall take steps reasonably necessary to ascertain the nature and location of the work. The general and local conditions shall be investigated which can affect the work or its cost, including but not limited to the following. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expenses to the Government. The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless the understanding or representation is expressly stated in this contract.

(1) Conditions bearing upon transportation, disposal, handling, and storage of materials.

(2) The availability of labor, water, electrical power, and roads.

(3) Uncertainties of weather, river stages, or similar physical conditions at the site.

(4) The conformation and conditions of the ground and equipment and facilities to be replaced and/or rehabilitated.

(5) The character of equipment and facilities needed preliminary to and during work performance.

(6) The amount of work space, accessibility, lighting, etc.

1.28 PERMITS AND RESPONSIBILITIES

The Contractor shall, without additional expense to the Government, be responsible for obtaining necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of

the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and property of others. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for completed unit of work that may have been accepted under the contract.

1.29 QUALITY CONTROL AT THE JOB SITE

The Contractor's quality control system shall encompass actions involving selection of construction material sources and suppliers, on-site and off-site fabrication of Contractor-furnished items to be included in the work, on-site and off-site production of construction materials, work placement procedures, workmanship, inspection, and testing. The system shall provide supervision, inspection, and tests of all items of work, including that of its suppliers and subcontractors, that will assure the compliance of all work with applicable specifications and drawings in respect to the Contractor furnished equipment, materials, workmanship, construction, finish, functional performance, and identification. The Contractor's system shall encompass all management and supervisory actions taken by its staff that affect quality of the finished construction work, including all inspection controls and tests required for compliance with the contract, except for those inspections and tests specifically reserved to be accomplished by the Government.

-- End of Section --

SECTION 01270

MEASUREMENT AND PAYMENT

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(NOT USED)

PART 3 EXECUTION

(NOT USED)

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL INFORMATION

In each instance the contract price for an item will constitute full compensation as herein specified, as shown, or as otherwise approved. The contract price and payment will also constitute full compensation for all work incidental to completion of the item, unless such work is otherwise specifically mentioned for separate payment under another bid item. In the event any work is required by the specification sections or by the drawings and not specifically mentioned in the measurement and payment paragraphs, separate or direct payment will not be made and all costs thereof are incidental to and included in the contract prices and payments for all items listed in the bid schedule.

1.2 MEASUREMENT

Items measured as a Lump Sum (LS) will be measured for payment as a completed job, in place, in the locations indicated. This measurement includes all incidental work and materials that are necessary to make a complete job. Unless the payment paragraph makes a specific exception of an item, incidental items will not be measured under another item.

1.3 PAYMENT

1.3.1 General

Payment for all work specified, shown, or incidental to complete the work will be made as follows:

(1) Line Item No. 3001; Design one 192,000/256,000 kVA, 230 kV, Class ONAN/ONAF, 3-phase spare power transformer.

Payment shall be full compensation for performing all work to design the transformer, complete, as specified and as approved. This design is considered a single event, and no design costs shall be loaded into the manufacturing costs.

(2) Line Item No. 3002; Manufacture, factory test, and deliver one 192,000/256,000 kVA, 230 kV, Class ONAN/ONAF, 3-phase spare power transformer and accessories complete to railhead in Libby, Montana, and provide services of Erecting Engineer.

Payment shall be full compensation for the labor, materials, equipment and transportation required to manufacture, test, and deliver the transformer and accessories by rail to Libby, Montana, including O&M manuals and all erecting engineer services.

(3) Line Item No. 3003; Perform delivery inspection, and truck transport transformer and accessories from railhead in Libby, Montana, to the Libby Dam Powerhouse.

Payment shall be full compensation for the labor, materials and equipment required to perform an inspection of the transformer on the railcar, off-load the transformer and accessories from the railcar onto a transport truck, and transport the transformer and accessories to the Libby Dam powerhouse.

(4) Line Item No. 3004; Offload transformer and accessories at Libby Dam, perform inspection and tests, move transformer to permanent storage location, and assemble the transformer.

Payment shall be full compensation for the labor, materials and equipment required to perform the inspections and tests on the transformer prior to off-loading from the transport truck at the Libby Dam Powerhouse, movement of the transformer and accessories to the permanent storage location, placement of the transformer onto the concrete mounting pad, and complete assembly of the transformer.

(5) Line Item No. 3005; Furnish transformer oil, oil-fill transformer, and perform field tests.

Payment shall be full compensation for the labor, materials and equipment required to deliver the new transformer oil, hot oil fill the transformer under vacuum, and perform all required field tests.

(6) Line Item No. 3006; Furnish jacks, and tools.

Furnishing jacks and special tools necessary to move and guide the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the required equipment and tools, complete, as specified and as approved.

(7) Line Item No. 3007; Furnish spare parts.

Furnishing spare parts for the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the spare parts for the transformer, complete, as specified in Section 16277 paragraph 2.19, and as approved.

(8) Line Item No. 3008; Contractor furnished training.

Contractor furnished training will be measured for payment as a complete pay item (Lump Sum). Payment shall be full compensation for performing training of Government personnel, complete, as specified in Section 01600 paragraph 3.12, and as approved.

PART 2 PRODUCTS & **PART 3 EXECUTION**

(NOT USED)

-- End of Section --

SECTION 01306

OPERATIONS AND MAINTENANCE DATA

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3.3 CONTENT
3.4 ELECTRONIC COPY
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SECTION 01306

OPERATIONS AND MAINTENANCE DATA

PART 1 GENERAL

1.1 GENERAL INFORMATION

Parts catalogs and operating instructions needed or useful in operation, maintenance, repairs, dismantling, or assembling, and for repair and identification of parts for ordering replacements, shall be especially prepared. The parts catalogs and operating instructions shall cover all equipment furnished under this contract and shall be assembled under a suitable common cover. The assembled material shall include complete identification of the spare parts furnished in compliance with the requirements of these specifications.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”:

SD-10 Operation and Maintenance Data

1. Initial Submittal of Operations and Maintenance Data; G,

An initial submittal of three complete draft copies of the Operations and Maintenance Data shall be made not less than 45 days prior to delivery of the equipment. The COR will return one draft copy with appropriate approval of, or comment on, the acceptability of the submittal. The Contractor shall resubmit the one draft copy with such corrected and/or additional data sheets and drawings as may be directed by the COR. One copy of each revised data sheet and drawings shall be furnished also for each of the two draft copies retained by the COR.

2. Final Submittal of Operations and Maintenance Data; G,

Upon "Final" approval of the draft copies of the Operations and Maintenance Data, the Contractor shall submit three additional copies for a total of six to the COR. All copies shall be furnished no later than the date specified for delivery of the equipment.

PART 2 PRODUCTS

2.1 BINDER REQUIREMENTS

Data for equipment shall be assembled in a binder for 8 ½ by 11 inch sheets with slide binding or screwpost fastening for replacement. Loose-leaf binders are not acceptable. A title on the cover shall show the information stated in paragraph 3.2 (1)-(7).

PART 3 EXECUTION

3.1 SPECIFIC REQUIREMENTS

Shop assembly or special drawings shall be of a size that requires folding only in left to right coordinate, and shall be 11" x 17" in size unless the original drawing is 8-1/2" x 11" in size, in which case provision of an 8-1/2" x 11" drawing will be permitted. A permanent reproducible shall be furnished for all drawings. This reproducible shall be in addition to the five copies specified. Each sheet shall be numbered and a revised index for the existing manual shall be provided. One copy of such manual shall contain all original versions of standard catalog cuts, manufacturer's data, parts sheets, and illustrations. All other copies shall be readable and non-permanent or non-water-resistant copies are not acceptable. All nonapplicable data such as description of other models, optional equipment not included, etc. shall be marked out. If reference is made to other drawings or data they shall be included. The O&M data shall list equipment covered; the manufacturer; and name, address, and telephone number of the local representative.

3.2 FORMAT

Binders shall be side-binding, telescoping-post, expandable-back, and shall have a supported vinyl cover with a stiff binder board for 8 1/2- by 11-inch sheets. Ring-type loose leaf binders will not be acceptable. One source of acceptable binders is as follows:

Arts & Crafts Book Manufacturing
E 618 Second Avenue
Spokane, Washington 99202
Telephone: (509) 747-3818

One copy of each of the drawings approved under this contract shall be furnished and shall be folded and bound as required for easy unfolding without removal from the binder. Each sheet in the binder shall be numbered and an index provided for ready reference to the data. All standard catalog cuts, manufacturer's printed data or descriptive literature, parts sheets, illustrations, etc., shall be either original manufacturer sheets or reproduced copies of equal clarity and durability. The following identification shall be inscribed on both the spines and covers:

(1) The words "OPERATIONS AND MAINTENANCE MANUAL."

(2) The name and location of the building, facility, and/or project.

(3) The volume number and total number of volumes.

(4) The systems and/or equipment therein.

(5) The name of the Contractor.

(6) The contract number.

(7) The year of completion of the contract.

3.3 CONTENT

The O&M manuals shall be structured to address each of the following topics in order for each system. When the topic does not apply to a particular system the topic name will be included in the manual with the words "DOES NOT APPLY."

3.3.1 Warning Page

A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

3.3.2 Index

Each manual shall have a master index at the front identifying all manuals and volumes and subject matter by system name for each. Following the master index, each manual shall have an index of its enclosures listing each volume, tab numbers, etc., as necessary to readily refer to a particular operating or maintenance instruction. Rigid tabbed fly leaf sheets shall be provided for each separate product and/or piece of equipment under each system in the manual. When a manual is divided into volumes, each volume shall have a master index at its front, followed by an index for the specific volume listing in detail all enclosed instructions for materials, individual pieces of equipment, and systems. All pages shall be numbered with the referenced number included in the index.

3.3.3 Description

Narrative and technical descriptions of the system and of the interrelations with other systems shall be provided.

3.3.4 Catalog Data Sheets

All catalog data sheets shall be inserted in an appendix at the end of the manual following the preventative maintenance (PM) charts appendix. This appendix shall be for catalog data sheets only. An index of the catalog data sheets shall be provided to provide clear and concise reference to shop drawings and individual pages within the manual. Standard catalog data sheets will not be acceptable unless irrelevant parts are marked out (with black "X") and relevant parts clearly identified. Any data on catalog sheets which does not directly relate to purchased equipment shall be marked out. Parts shall be so identified that they can be readily ordered from local area industrial supply outlets if not of special manufacture. A cross-reference between items described in catalogs, instructions, and drawings shall be provided to facilitate ease of location of parts described. Highlighting and "scribble notes" will not be acceptable for identification purposes. Catalog data sheets shall be inserted into the manual such that positive identification of all parts on catalog data sheets are clearly identified by:

(1) Part Name. A clear and descriptive name shall be given to each component in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and telephone number of the manufacturer shall be given along with the catalog part number.

(3) Material Safety Data Sheet (MSDS). A copy of the MSDS for the transformer oil shall be included with the catalog data sheets.

3.3.5 Spare Parts Listing

The spare parts listing shall be inserted in an appendix at the end of the manual following the catalog data sheets. This appendix shall be for spare parts listing only. The spare parts listing shall clearly state the spare parts supplied and a list of recommended spare parts to be stocked. The spare parts listing shall clearly identify:

(1) Part Name. A clear and descriptive name shall be given to each component listed as a spare part in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and Telephone number of the manufacturer shall be given along with the catalog part number.

(3) Quantity. The quantity of each part listed as a spare part shall be given.

(4) Reference to Catalog Data Sheets. Each spare part shall be referenced to the corresponding catalog data sheet by page number.

(5) Price.

3.3.6 Operation Data

The operation data shall include specific operating instructions, functional description of operating parts, and special precautions or procedures to be considered. The Contractor shall be responsible for the necessary coordination between his subcontractors, suppliers, and manufacturers to assure complete submittals on individual interrelated equipment components. The data shall include the following:

(1) Check List Prior to Start Up. Precautions and prechecks prior to start up of equipment and/or system, including safety devices, monitoring devices and control sequence shall be provided.

(2) Start Up and Operation. Step-by-step sequential procedures For start up and normal operation checks for satisfactory operation shall be provided. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the operating instructions and flagged for the attention of the operator. Procedures shall include test, manual or normal, and automatic modes.

(3) Shutdown. Procedures for normal and emergency shutdown of equipment and/or systems shall be provided. The instructions shall include any procedures necessary for placing the equipment and/or system on standby or preparing the equipment and/or system for start up

at a later time. Procedures shall include test, manual or normal, and automatic modes.

(4) Normal Operating Conditions. A tabular listing of the Normal operating conditions of each individual component, including the settings, operating temperature, valve conditions, etc.

3.3.7 Maintenance Procedures

Recommended procedures shall indicate preventive maintenance, lubrication, and good housekeeping practices which should be performed by operating personnel as well as more complex maintenance procedures which would normally be performed by trained maintenance personnel only, including instructions for oil filling and drying the oil-filled transformer. The procedures shall be presented with a schedule indicating time frames or operating hours for specific maintenance to be accomplished. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the maintenance procedures and flagged for the attention of personnel. The procedures shall include necessary operating instructions for taking equipment off line, putting equipment on line, or putting equipment on standby. The instructions shall include all necessary material, equipment, and system data to perform maintenance work and shall include, but not be limited to, manufacturers bulletins, catalogs, and descriptive data; certified performance curves, copies of approved test plans, including logs and records of performance acceptance test results, and actual adjustments made during final acceptance and inspection; system layouts, including block diagrams, wiring, control, and isometric diagrams; schematic items within the facility; interrelationships with other items of system; and a list of special tools required.

3.3.8 Repairs

Repair procedures shall be presented with a step-by-step procedure for locating and correcting the trouble. A "shop manual" may be used for this purpose. The procedures shall clearly indicate a major repair activity which should only be performed in a shop or factory versus normal repair work that may be performed onsite or with equipment online. The procedures shall also clearly indicate the limit of repair work that may be performed by Government personnel during the warranty period without voiding warranty provisions. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the repair procedures and flagged for the attention of personnel. Repair procedures shall be keyed to a troubleshooting guide outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.9 Operator Preventive Maintenance, Major Maintenance, and Adjustments

The instructions shall include recommended operator preventive maintenance which would normally be performed by operating personnel and adjustment procedures necessary for normal operation. Schedules shall be provided indicating time frames or operating hours for initiating operator maintenance and adjustments, and including manufacturer's recommended major maintenance requirements. Emergency adjustments shall be included and flagged for operator's attention; the instructions shall also include procedures for emergency repairs that could be performed by operating personnel. These emergency repairs or "trouble-shooting guides" shall be outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.10 Maintenance Schedule

A separate schedule of all required periodic maintenance shall be included. This schedule shall list by frequency of occurrence all lubricants and special adjustments required. The types and amounts of lubrication must be specified. The Contractor shall verify that the furnished maintenance schedule agrees with the published manufacturer's data.

3.4 ELECTRONIC COPY

One copy of the complete O&M manual shall be furnished in electronic format on a CD ROM. The use of the Adobe Acrobat portable document format (PDF) is acceptable.

3.5 PAYMENT

No separate payment will be made for the preparation and submittal of O&M manuals. Costs incurred by the Contractor in the preparation and submittal of O&M manuals shall be considered as incidental and included in the contract price. Approval and acceptance of the final O&M manuals shall be accomplished before final payment is made to the Contractor.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

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1.1 SUBMITTAL IDENTIFICATION (SD)
1.2 SUBMITTAL CLASSIFICATION
1.3 APPROVED SUBMITTALS
1.4 DISAPPROVED SUBMITTALS
1.5 WITHHOLDING OF PAYMENT
1.6 GENERAL SUBMITTAL REQUIREMENTS
1.7 SUBMITTAL REGISTER
1.8 SCHEDULING
1.9 TRANSMITTAL FORM (ENG FORM 4025)
1.10 SUBMITTAL PROCEDURES
1.11 CONTROL OF SUBMITTALS
1.12 GOVERNMENT APPROVED SUBMITTALS
1.13 INFORMATION ONLY SUBMITTALS
1.14 STAMPS

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-09 Manufacturer's Field Reports

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. A “shop drawing” is a Contractor’s or manufacturer’s drawing which provides detail for the manufacturing, delivery, site movement, and assembly of the equipment provided.

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings", as defined, above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error

which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 GENERAL SUBMITTAL REQUIREMENTS

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register, ENG Form 4288, indicating items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project. The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 "Shop Drawings" Procedures

The procedure for "shop drawings" shall be as follows:

(1) "Shop Drawings" Approved by Contractor. All "shop drawings" submittals shall be reviewed and corrected to make them complete and in accordance with the contract. Approval shall be indicated on each drawing by an "Approved" stamp as shown in paragraph 1.14. Names and titles of individuals authorized by the Contractor to approve drawings shall be provided prior to any submission. All shop drawings shall be submitted as indicated herein. Submittals which are not required to be approved by the Government ("information only") will be monitored and spot-checks will be made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for Government approvals.

(2) "Shop Drawings" Approved by the Government. Before submission the Contractor shall review and approve all "shop drawings" prepared by subcontractors, suppliers, and the Contractor for completeness and compliance with plans and specifications, and shall so certify by stamp on each drawing or item of printed material. (Red markings are reserved for the Government.) Suppliers or subcontractors certifications are not acceptable as meeting this requirement. Submittals will be reviewed and processed as follows: NOTE: The following action codes are to further define only the referenced codes on the reverse side of ENG Form 4025.

a. Action Code A (Approved as Submitted). Shop drawings which can be approved without correction will be stamped "Approved" and one reproducible, or two copies of catalog and other printed data, will be returned to the Contractor.

b. Action Code B (Approved, Except as Noted, Resubmission Not Required). Shop drawings which have only minor discrepancies will be corrected and stamped "Approved as Corrected", or "Except as Noted." Corrections will be identified. Distribution will be same as for "Approved" drawings.

c. Action Code C (Approved, Except as Noted, Resubmission Required). Two prints of shop drawings which are incomplete or require more than minor corrections will be marked in red to indicate necessary corrections. One marked copy will be returned to the Contractor stamped "Returned for Correction." Transparencies of such drawings will be destroyed.

d. Action Code E (Disapproved). One print of shop drawings which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections will be returned to the Contractor stamped "Disapproved." An explanation will be furnished on the print or on ENG Form 4025 indicating reason for disapproval. Transparencies of such drawings will be destroyed.

e. Resubmittal. Resubmittal will not be required for drawings with Action Code A or B unless subsequent changes are made by the Contractor or by a contract modification. For drawings with Action Code C or E, corrections required shall be made, any changes shall be noted by dating the revisions to correspond with the change request date, and the drawings shall be promptly resubmitted for review. Government costs incurred after the first resubmittal will be charged to the Contractor.

1.10.2 "Shop Drawings" Submittal

1.10.2.1 General

ENG Form 4025 shall be in three (3) copies used for transmitting "shop drawings" submittals. Each submittal requiring Government approval, five copies; and for information only, three copies, shall be listed separately naming subcontractor, supplier, or manufacturer, specification paragraph number(s), drawing/sheet number(s), pay item number, and any other information needed to identify the item, define its use, and locate it in the work. Each submittal shall be complete containing all information needed to determine contract compliance.

1.10.2.2 Drawings

Each drawing shall be not more than 28 inches high by 40 inches wide, with a title block in lower right hand corner and a 3 by 4 inch clear area adjacent. Title block shall contain subcontractor's or fabricator's name, contract number, description of item(s), bid item number, and a revision block. Unless otherwise specified, two prints of any type, except blueprints, and one electronic drawing file in an approved Computer Aided Design/Drafting (CADD) format discussed in paragraph 1.10.2.3 below shall be submitted. A blank margin of 3/4 inch at bottom, 2 inches at left, and 1/2 inch at top and right shall be provided. Separate drawings are required for each bid item. Computed weight shall be indicated for all items for which payment is based on weight. Where drawings are submitted for assemblies of more than one piece of equipment or systems of components dependent on each other for compatible characteristics, complete information shall be submitted on all such related components at the same time. The information

shall be complete and the sequence of drawing submittal shall be such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, shall consist of complete assembly and detail drawings. All revisions after initial submittal shall be shown by number, date, and subject in revision block. Any drawing or electronic drawing file submitted that is not of satisfactory quality will be returned without action.

1.10.2.3 Final Approved Version of Electrical and Mechanical Shop Drawing

Upon completion of the work under this contract, the Contractor shall submit for review and approval by the Contracting Officer, hard copies (black and white prints) of the final approved versions of the drawings. The drawings shall show all changes and revisions, including any field changes, made up to the time that the work is completed and accepted. The Contractor shall also prepare an index drawing for all Contractor prepared drawings. The index drawing shall include the sheet number, file number, drawing title, and the CADD file name for each drawing. After approval of these drawings, the Contractor shall furnish a complete set of electronic files in Bentley (Intergraph) MicrosStation compatible with Version 8, for all drawings produced by the Contractor in performance of this contract. Electronic files shall be .dgn format with element types that can be edited (i.e. no attached raster files, .dxf, or .dwg file formats will be accepted). Each drawing sheet shall be a separate CADD file. The files shall be submitted on CD ROM's. In addition, the Contractor shall furnish one paper copy of each drawing that is on the CD ROM's. The paper drawings and the files on the CD ROM's shall be identical. All paper drawings submitted to the Contracting Officer shall be no larger than 28 by 40 inches in size.

1.10.3 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.10.4 Other Submittals

All requirements for "shop drawings" under paragraphs 1.10.2.1 and 1.10.2.2 shall apply to catalog cuts, illustrations, printed specifications, or other data submitted except that five copies for Government approval and three copies for information only shall be submitted. Submittals shall be made on 8 1/2- by 11-inch paper or when appropriate as a drawing not larger than 28 inches high by 40 inches wide. Inapplicable portions shall be marked out and applicable items such as model numbers, sizes, and accessories shall be indicated. Decisions on these other submittals will be given in accordance with paragraph Government Approved Submittals.

1.11 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

1.13 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.14 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR
(Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

-- End of Section --

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Libby Dam 230 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 01010																										
SD-01		1	1.14	Loading Plan				x								x	AO									
SD-01		2	1.18.1	Contractor's Work Supervisor Qualifications					x							x	AO									
SD-01		3	1.24	Access Schemes				x								x	AO									
SD-01		4	1.26	Site Work Schedule				x								x	AO									
SECTION - 01306																										
SD-10		1	1.2	Initial Submittal of O&M Data										x		x	HDC									
SD-10		2	1.2	Final Submittal of O&M Data										x		x	HDC									
SECTION - 01355																										
SD-01		1	1.10.1	Environmental Protection Plan				x								x	AO									
SECTION - 01600																										
SD-01		1	3.3	Transformer Movement Plan				x								x	AO									
SD-01		2	3.5.1	Site Del Inspection Procedure and Schedule			x									x	AO									
SD-01		3	3.8.2	Transformer Site Assembly Procedure			x									x	HDC									
SD-06		1	3.8.3	Transformer Oil Field Test Report						x						x	AO									
SD-06		2	3.10	Tran Field Test Report						x						x	AO									
SD-08		1	3.12	Training Outline				x								x	AO									
SD-09		1	3.5.1	Impact Recorder Summary Report						x						x	AO									
SD-09		2	3.11	Erecting Engineer's Record									x			x	AO									
SD-09		3	3.5.3	Site Delivery Inspection Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Libby Dam 230 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 16277																										
SD-02		1	1.4	Outline, Assembly, and Detail Drawings		x										x	HDC									
SD-02		2	1.4	Installation Drawings (as required)		x										x	HDC									
SD-05		1	1.4	Descriptive Data	x											x	HDC									
SD-05		2	2.1.5.1	Siesmic Anchorage Design Calculations	x											x	HDC									
SD-06		1	3.2	Transformer Factory Acceptance Test Report						x						x	HDC									
SD-06		2	3.2.3.1	Bushing Design Test Reports						x						x	HDC									
SD-06		3	3.2.3.3	Bushing Routine Test Reports						x						x	HDC									
SD-06		4	3.2.3.4	Bushing Current Transformer Test Reports						x						x	HDC									
SD-06		5	3.2.4	Surge Arrester Design Test Reports						x						x	HDC									
SD-06		6	3.2.4	Surge Arrester Conformance Test Reports						x						x	HDC									
SD-07		1	2.1.5	Transformer Siesmic Capability Certification							x					x	HDC									
SD-07		2	2.14.1	Transformer Oil Certification							x					x	HDC									
SD-07		3	3.2	Factory Test Dates Notification				x								x	HDC									
SD-08		1	3.2	Factory Test Procedures			x									x	HDC									
SECTION - D																										
SD-07		1	1.2 (2)	Expected Delivery Date Notification				x								x	AO									
SD-07		2	1.2 (5)	Shipping Notices	x											x										
SECTION - E																										
SD-01		1	1.3.2	Quality Control Plan				x								x	HDC									
SD-09		2	1.8	Material Inspection and Receiving Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Libby Dam 230 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - F																										
SD-07		1	1.6	Project Schedule				x								x	AO									
SECTION - H																										
SD-07		1	1.9	Bill of Materials	x											x	AO									
SD-07		2	1.1	Erecting Engineer's Qualifications					x							x	HDC									

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SECTION 01355

ENVIRONMENTAL PROTECTION

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SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 GENERAL INFORMATION

This section covers preventing environmental pollution and minimizing environmental degradation during, and as a result of, transformer delivery, site movement, assembly and oil filling operations at Libby Dam. Other requirements in the sections may also contain specific requirements for environmental protection. Those specific requirements are in addition to or modify the requirements in this section. The control of environmental pollution requires consideration of sound levels, air and water.

1.2 PUBLICATIONS

1.2.1 APPLICABLE REGULATIONS

All environmental pollution shall be prevented, abated, and controlled and environmental degradation arising from site work activities shall be minimized by complying with all applicable Federal, State, and local laws and regulations, as well as specific requirements of this contract. Where conflicting or duplicate regulations apply, the most stringent requirement shall govern. The Contractor shall comply with the following list of environmental regulations where applicable. This list is not inclusive of all environmental requirements, but represents the Federal regulations most likely to apply to work under this contract.

a. Clean Air Act - 40 CFR 61: Emission Standards for Hazardous Air Pollutants

b. Solid Waste Disposal Act - 40 CFR 241: Land Disposal - 40 CFR 245: Resource Recovery

c. Resource Conservation and Recovery Act - 40 CFR 260-272 : Hazardous Waste Management

d. Comprehensive Environmental Response , Compensation and Liability Act - 40 CFR 300-302: National Oil and Hazardous Substances Contingency Plan for hazardous substance spills and cleanup

e. Clean Water Act - 40 CFR 110-117, 122: Point source discharges into U.S. waters

f. Executive Order 12856 - Federal Compliance Order with the Emergency Planning and Community Right-to-Know Act and the Pollution Prevention Act

g. 49 CFR 100-177, Hazardous materials transportation regulation

1.2.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.62	Safety and Health Regulations for Construction: Lead
33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171-178	Hazardous Materials Regulations

1.3 SUBMITTALS

The following shall be submitted as stated in accordance with SECTION 01330, "SUBMITTAL PROCEDURES":

Environmental Protection Plan including proposals for implementing this section for environmental protection with 180 days after Notice to Proceed (NTP) and prior to commencing site work. Included in the Environmental

Protection Plan shall be the Spill Control Plan and Contaminant Prevention Plan. If satisfactory, the plan will be approved and one copy will be returned. If unsatisfactory, the plan will be returned for resubmission (see paragraph 1.10, "ENVIRONMENTAL PROTECTION PLAN").

1.4 DEFINITIONS

1.4.1 Environmental Pollution And Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.4.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.4.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents and waste solvents.

1.5 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of site work. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.6 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.7 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all

fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.8 NONCOMPLIANCE

An order may be issued stopping all or part of the work for failure to comply with the provisions of this section until corrective action has been taken. No time lost due to such stop orders shall be the subject of a claim for extension of time or for costs or damages unless it is later determined that the Contractor was in compliance.

1.9 ENVIRONMENTAL LITIGATION

1.9.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts of omissions of the Contractor or a subcontractor at any tier not required by the terms of this Contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this Contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this Contract under the terms of Contract Clause SUSPENSION OF WORK. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) as provided in this clause, subject to the provisions thereof.

1.9.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

1.10 ENVIRONMENTAL PROTECTION PLAN

1.10.1 General

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during sit work. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods

for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.10.2 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During site work, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.10.3 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

(1) Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.

(2) Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

(3) Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

(4) Description of the Contractor's environmental protection personnel training program.

(5) A Spill Control plan shall be provided, and shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

(c) Training requirements for Contractor's personnel and methods of accomplishing the training.

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified. Number required and availability must consider the logistics and time required to begin containment and cleanup of a spill, accessibility, number of remote work areas, number and location of floating

plants on the river, etc. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

(f) The methods and procedures to be used for expeditious contaminant cleanup.

(g) The name of the individual who will report any spills and who will follow up with complete documentation.

(h) The 24-hour spill notification telephone numbers including NRC, OERS, County, and local police and/or Emergency Response organization as appropriate and required. The plan shall include 24-hour emergency number for the GQAR, Project Engineer, and Resident Engineer.

(6) A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

1.10.4 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, report forms, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.11 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.12 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable

adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS

(not used)

PART 3 EXECUTION

3.1 IMPLEMENTATION

3.1.1 Planning

No physical work at the site shall be started until an environmental plan has been approved or specific authorization is obtained to start a phase of the work. Preparation and submittal of supplemental plans may be required if additional environmental protection planning is found necessary for later phases of work. As a minimum the plan shall include the sections indicated below:

(1) A contamination-prevention section listing all potentially hazardous petroleum products and toxic materials on the job site and corresponding provisions to be taken to prevent accidental or intentional introduction of such materials into any waterway, the air, or the ground. Section is to include plans for preventing polluted runoff from plant, equipment parking, and maintenance areas from entering local water bodies. MSDS information shall be provided to the project prior to bringing material on-site.

(2) A containment and cleanup section including the procedures, instructions, and reports to be used in the event of an unforeseen oil or chemical spill. This section shall include as a minimum:

(a) The name of the individual who will be responsible for implementing and supervising the containment and cleanup. This person shall be on-site during the handling or disposition of all potentially hazardous materials.

(b) A list of materials and equipment to be immediately available. For all work in or adjacent to water a 60-meter-long minimum containment boom, skimming equipment, and an absorbent cleanup kit shall be available at the job site. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(c) The names and locations of suppliers of containment materials and names and locations of additional fuel oil recovery, cleanup, restoration, and material placement equipment available in case of an unforeseen spill emergency.

(d) The methods and procedures to be used for expeditious cleanup.

(e) The name of the individual who will report any spills and who will follow up with complete documentation.

3.1.2 Spill Protection

Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, and waste washings from entering public lands or waters. The Contractor shall provide and utilize the following prevention/cleanup materials:

(1) Fuel dispensing vehicles shall carry a fuel containment berm such as Blue Ribbon Environmental (BRE) Tanker Fueling Berm spill kit on board at all times.

(2) Overnight containment berm for all vehicles stored unattended overnight such as BRE Port-A-Berm.

(3) Emergency spill response kit to be available within 15 minutes transport time to equipment performing work such as BRE-PZ-HMR-25G-H.

(4) Emergency spill absorbent matts (10 – 18”x18”) to be carried on board equipment performing work such as BRE-PZ-MT-1818.

(5) Blue Ribbon Environmental’s corporate office phone number is 800-436-1050, or 509-489-1704.

3.1.3 Coordination

Prior to the work a meeting shall be held with the Government to develop mutual understandings relative to the administration of the environmental protection program.

3.1.4 Completion

Before this contract is completed all restoration, cleanup, and other work required to leave the site in an acceptable condition shall have been completed. Final payment will not be made until the environmental protection requirements have been met.

3.2 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

3.3 ENVIRONMENTAL LITIGATION

3.3.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts or omissions of the Contractor or a subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this

contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this contract. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provision thereof.

3.3.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

3.4 HAZARDOUS WASTE

(1) Standards Applicable to Generators of Hazardous Wastes, 40 CFR 262, shall be complied with for the on-site handling and storage of all hazardous waste generated by the project.

(2) Hazardous waste shall not be stored on the ground, near the water or in an area where accidental release of the material can enter waterways. Secondary containment and weatherproof covering shall be used for all storage of hazardous materials or waste.

3.5 DISPOSAL OF HAZARDOUS WASTE

The following shall apply to disposal of any hazardous waste:

(1) The Contractor, where possible, shall use or propose for use materials which may be considered environmentally friendly in that waste from such materials is not regulated as a hazardous waste or is not considered harmful to the environment.

(2) Documentation for analysis, sampling, transportation, and disposal of all hazardous waste streams generated during this contract shall be in accordance with 40 CFR 260-272 and 49 CFR 100-177.

(3) A copy of all hazardous waste determinations, sample results, and shipping manifests shall be furnished to the Government Quality Assurance Representative (GQAR) to verify compliance with Federal, State, and local regulations.

(4) All hazardous wastes shall be removed from the Project for proper disposal within 90 days of waste generation. All hazardous waste shall be packaged, labeled, and marked in accordance with 40 CFR 261 and 40 CFR 262. All hazardous waste shall be stored in accordance with 40 CFR 264.

(5) Certificates of Destruction or Disposal Certificates shall be submitted for all hazardous wastes within 14 days of actual disposal.

(6) The Contractor's Environmental Protection Agency (EPA) identification number shall be used to dispose of all hazardous wastes generated by the Contractor and its subcontractors under this contract. This is construed to mean all hazardous wastes the Contractor or subcontractors generate from materials brought on the site for the purpose of performing work under the terms of the contract.

(7) The Government's EPA identification number shall be used to dispose of all hazardous waste generated from Government-owned facilities on the project. This is construed to mean hazardous wastes generated from the repair, demolition, or removal of any existing materials and buildings from Government facilities and is not intended to include any wastes generated by the Contractor in the performance of its work.

(8) It is the responsibility of the Contractor to prepare all hazardous waste manifests. The Contractor shall prepare manifests for Government signature when the Government's EPA identification number is used. The manifest shall be submitted 48 hours in advance of the waste being removed. The Environmental Compliance Coordinator (ECC) will review and sign the manifest when the transporter arrives.

(9) Hazardous or dangerous waste shall be recycled to the maximum extent possible. Placing hazardous or dangerous waste in a permitted hazardous waste landfill shall be the last resort. If such a facility is necessary, the Contractor shall dispose of it in compliance with Federal, State and local requirements.

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

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1.2 ORDERING INFORMATION

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(NOT USED)

PART 3 EXECUTION

(NOT USED)

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SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. IEEE C57.13, "Requirements for Instrument Transformers"). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: http://www.aci-int.org

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: http://www.aashto.org

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
E-mail: info@ansi.org
Internet: http://www.ansi.org/
Note --- Documents beginning with the letter "S" can be ordered from:

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674
E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 Hoes Lane
Piscataway, NJ 08855-1331
Ph: 732-981-0060
Fax: 732-981-1712
E-mail: customer.services@ieee.org
Internet: http://www.ieee.org

INTERNATIONAL CODE COUNCIL (ICC)
5203 Leesburg Pike, Suite 600
Falls Church, VA 22041
Ph: 703-931-4533
Fax: 703-379-1546
E-mail: webmaster@iccsafe.org
Internet: http://www.intlcode.org

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)
127 Park Street, NE
Vienna, VA 22180-4602
Ph: 703-281-6613
Fax: 703-281-6671
E-mail: info@mss-hq.com
Internet: http://www.mss-hq.com

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209
Ph: 703-841-3200
Fax: 703-841-3300
E-mail: webmaster@nema.org
Internet: http://www.nema.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: http://www.nfpa.org

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PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

-- End of Section --

SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section in conjunction with SECTION 16277 covers the Contractor's responsibilities for shipment, hauling, and site assembly of the transformer as required for permanent storage at the Libby Dam Powerhouse, field testing, provision of erecting engineer services, and for Contractor-furnished training of Government personnel in the theory, operation, and maintenance of the power transformer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.13	(1993) Requirements for Instrument Transformers

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Transformer Movement Plan; G, AO

A transformer movement plan detailing movement of the transformer from the railhead in Libby, Montana to its final storage location at the Libby Dam powerhouse shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.3, "TRANSFORMER MOVEMENT PLAN").

2. Site Delivery Inspection Procedure and Schedule; G, AO

A transformer site delivery inspection procedure and schedule detailing the step-by-step activity listings and schedule that demonstrates the dependency of one activity on another, shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.5.1, “Site Delivery Inspection Procedure and Schedule”).

3. Transformer Site Assembly Procedure; G, HDC

A transformer site assembly procedure detailing the reassembly of the transformer, heated oil filling, recommended interconnections as required for permanent storage, and final field testing shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.8.2, "Transformer Site Assembly Procedure").

SD-06 Test Reports

1. Transformer Oil Field Test Report; G, AO

A transformer oil field test report, showing that the transformer oil meets the requirements of SECTION 16277 (paragraph 2.13.3) prior to filling of the transformer at the Libby Dam powerhouse, shall be submitted for approval not later than 48 hours following completion of the tests (see paragraph 3.8.3, "Handling and Installation of Transformer Oil").

2. Transformer Field Test Report; G, AO

A transformer field test report shall be submitted for approval not later than 14 calendar days following completion of the field tests (see paragraph 3.10, "FIELD TESTS").

SD-08 Manufacturer's Instructions

1. Training Outline; G, AO

A training outline covering the material to be used for performance of the on-site training session, including a schedule, shall be submitted for approval not later than 30 calendar days prior to the completion of the transformer field tests (see paragraph 3.12, "CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL")

SD-09 Manufacturer's Field Reports

1. Impact Recorder Summary Report; G, AO

The impact recorder summary report, including a copy of the impact recorder log, shall be submitted for approval within 24 hours after delivery of the transformer f.o.b. Libby Dam powerhouse (see paragraph 3.5.1, "Site Delivery Inspection Procedure and Schedule")

2. Erecting Engineer's Record; G, AO

The transformer manufacturer's erecting engineer's record shall be submitted for approval upon request by the Government, or within 7 calendar days following completion of all site work (see paragraph 3.11, "ERECTING ENGINEER SERVICES").

3. Site Delivery Inspection Report; G, AO

The site delivery inspection report shall be submitted for approval within 48 hours following completion of the site delivery inspection (see paragraph 3.5.3, "Site Delivery Inspection Report")

1.4 POINTS OF CONTACT FOR SHIPPING AND SITE ACCESS

The closest railroad access to the Libby Dam Powerhouse is a railroad spur provided by the Burlington Northern Sante Fe Railroad. Points of contact for coordinating shipping and site access is as follows:

Burlington Northern Sante Fe (BNSF) Corporation

2650 Lou Menk Drive, 2nd Floor
P.O. Box 961057
Fort Worth, Texas 76161-0057
(888) 428-2673

U.S. Army Corps of Engineers

Libby Project Site
Facility Manager
Michael Shea
17115 Highway #37
Libby, Montana 59923-9703
(406) 293-7751, ext. 211

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 TRANSFORMER SHIPMENT PREPARATION

The transformer equipment, accessories, and spare parts shall be prepared in such manner as to protect them from damage in transit. The Contractor shall be responsible for and make good any and all damages incurred in loading or in transit. It is the Contractor's responsibility to supply units of shipping dimensions and weight that allow for transport from the point of manufacture to the Libby Dam powerhouse. Heavy parts shall be securely mounted on skids to facilitate handling. If beams are required to distribute loading on the railcar, their weight and height shall be taken into consideration when determining shipping dimensions and weight, and the beams shall be provided as part of the contract. Any internal blocking or bracing that is to be removed from the transformer at its destination shall be colored bright yellow, and specifically addressed in the Transformer Site Assembly Procedure. Any material to be returned to the vendor after transformer shipment or installation is complete shall be returned at the Contractor's expense, and shall bear identification of material ownership and shipping address. Materials not so marked will be disposed of at the Government's discretion. All crates containing equipment that should be stored indoors shall be marked "STORE INDOORS" in 2-inch high lettering. For items that are required to be shipped and stored in a particular arrangement such as bushings, shall be marked with "THIS SIDE UP" or similar in 2-inch high lettering. The transformer cooling fans, including associated mounting hardware, shall be packaged and shipped in separate wooden shipping crates for indoor storage at the Government facility.

3.2 SHIPPING

3.2.1 Preparation for Shipment

The transformer shall be delivered without oil. The tank shall be purged, filled with dry nitrogen or dry air (dew point of -50 degrees-C maximum), under a pressure sufficient to ensure that temperature changes encountered in transit will not result in negative pressures, and then sealed. A pressure gauge shall be installed at the gas connection, and a shipping marker shall be attached near the gas connection showing the absolute pressure, type of gas, temperature, and date the tank was sealed. At time of shipment, a dew point test shall be performed on the gas in the transformer. The dew point temperature and the test method used shall be shown on the shipping marker. Transformers shipped by rail shall be shipped on rail cars equipped with hydraulic draft gear and hydraulic snubbing devices.

3.2.2 Impact Recorder

The transformer shall be shipped with a 3-axis digital impact recorder with GPS tracking, such as the Lat-Lon "RoadRider" monitoring and tracking system. The impact recorder shall be mounted on a plate that is part and parcel to the transformer and covered with a shield. The impact recorder shall be inspected before removal for tight securement, in position as loaded, protective cover intact, seals in position, and whether the area the device is secured to is intact, loose, or deformed. Any exceptions to the shipment observed shall be brought to the attention of the COR. The digital impact recorder shall be calibrated to record and transmit impact data greater than 0.75g, and shall also provide timed reports every 4 hours. The impact recorder "real-time" data shall be Internet viewable, and the Contracting Officer shall be provided with the "login" and "password" for site access prior to shipment. Mounting provisions for the impact recorder shall be removed after delivery of the transformer.

3.2.3 Shipment to Libby Dam

After completion of factory testing and the transformer has been released for shipment by the COR, the transformer and ancillary equipment shall be prepared for shipment and transported from the Contractor's manufacturing facility to Libby Dam. If transported by rail, the Contractor shall off-load the transformer at the rail siding in Libby, Montana, on to truck transport for delivery to the Libby Dam powerhouse.

3.2.4 Shipment of Transformer Oil

The transformer oil shall be shipped to the job-site in suitable tank trucks. The oil shall remain stored in the trucks at the job-site until the transformer is ready to be filled. The cost of providing and returning the oil tank trucks shall be borne by the Contractor, and shall be included in the contract price. The Government will not be responsible for any charges accruing on oil tank trucks due to untimely delivery.

3.3 TRANSFORMER MOVEMENT PLAN

The Contractor shall be responsible for the transport and movement of the transformer to the Libby Dam powerhouse. A transformer movement plan shall be submitted for approval, and shall include the following as a minimum.

Government approval of the movement plan does not constitute approval by railroad or transportation authorities.

(1) The method and means of lifting and off-loading the transformer from the railcar (if shipped by rail) and onto a transport truck.

(2) Drawings or detailed maps showing the intended route to be taken by the transporter to the Libby Dam powerhouse.

(3) Wheel, axle, outrigger, and track loads of the transport truck, as applicable, and their locations along the route. Axle loading and road loading limitations shall be coordinated with the applicable state and county Departments of Transportation.

(4) The method and means of transformer handling and placement into its final storage location at the Libby Dam powerhouse, including equipment, loading plans for equipment, and intended route while at the powerhouse.

3.4 HAULING

The dimensions and weight (without oil) of the largest piece of each unit as shipped by the Contractor shall not exceed that allowed for truck transport and for movement at the Libby Dam powerplant. In the event the shipping dimensions or weight of the largest piece exceed those allowed for truck transport or within the powerplant, the unit shall be designed such that its weight and dimension can be safely reduced in the field to that allowed for transport. Any limitations affecting transportation shall not become the basis for claims or damages, or for extension of time for completion of work.

3.5 SITE DELIVERY INSPECTIONS

3.5.1 Site Delivery Inspection Procedure and Schedule

A transformer site delivery inspection procedure and schedule shall be submitted, and shall contain a step by step activity listing and a schedule that demonstrates the dependency of one activity on another. Included in the procedure shall be the persons on each shift responsible for superintendence and safe clearance. Activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included in the plan. An Impact Recorder Summary Report shall be submitted within 24 hours after delivery of the transformer. All material and equipment received shall be checked by the Contractor against shipping lists for shortage and damage.

3.5.2 Sample Site Delivery Inspection Procedure

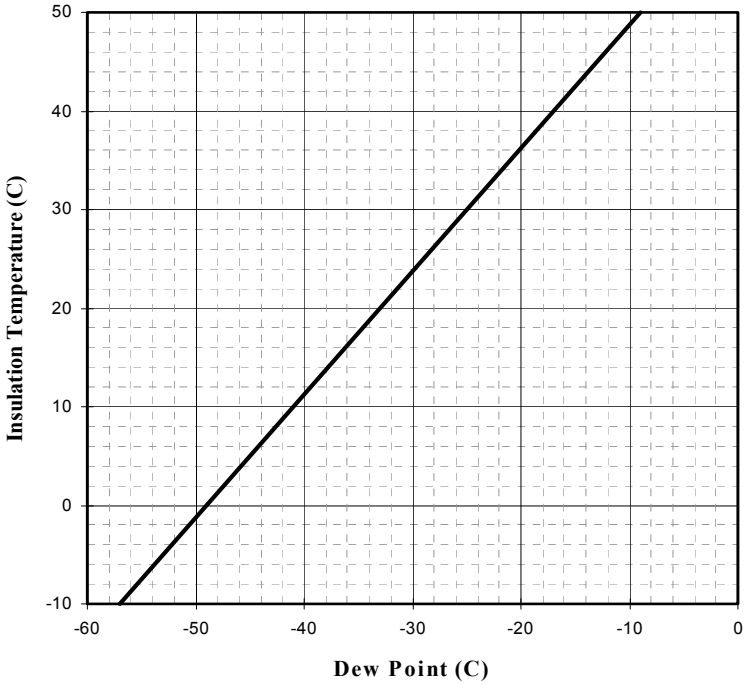
The following outline is based on the expected site delivery inspection and shipping procedure, and is intended to show the scope of the required work. The actual step-by-step procedure submitted shall be applicable to the transformer actually furnished, may differ from the following procedure, and shall list methods of repair and/or retesting if unacceptable results of the inspections are obtained.

(1) Perform an on car external inspection of the transformer and associated equipment for shipping damage, including signs of movement on the transporter, and loose or damaged tie rods.

(2) Check the tank gas pressure by use of a pressure gauge. Tank pressure shall be positive.

(3) Perform a dew point check. The dew point shall not exceed the temperatures for corresponding insulation temperatures, as indicated on the chart, below.

DEW POINT LIMITS



(4) Inspect the impact recorder charts in the presence of the COR for any indication of excessive impacts during shipment. If damage due to shipment is suspected, a core insulation test shall be performed. If the transformer fails the core insulation test, recommendations for repair shall be included in the site delivery inspection report.

(5) If shipping damage is suspected, perform an on car internal inspection of the suspect transformer to check for internal damage such as loose coils, broken lead supports, dislodged end insulation, frayed lead insulation, core grounds, or loose nuts or bolts. A temporary cover shall be erected over the transformer, and the manhole covers shall be cleaned before the tank is opened. Prior to performing the internal inspection, the tank shall be purged with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. The duration the inside of the tank is exposed to the atmosphere shall be recorded, and kept to a minimum. Reseal the transformer after the internal inspection has been completed, and repressurize the transformer to 2 psi with dry nitrogen or dry air.

Positive pressure shall be maintained during transportation of the transformer to the project, off loading, and until such time that the tank is breached during assembly. An additional dew point check shall be performed 24 hours after reseal of the transformer.

(6) All inspections listed in (1) through (5), above, shall be repeated after the transformer has been trucked to the Libby Dam powerhouse.

3.5.3 Site Delivery Inspection Report

After completion of the transformer site delivery inspection, the Contractor shall submit a site delivery inspection report, based upon the approved procedural outline. The site delivery inspection report shall include, but not necessarily be limited to, the following:

(1) Gas analysis and pressure.

(2) Visual inspection log.

(3) Core insulation test results (if required).

(4) Proposed method of repair of any damage incurred during shipment.

(5) Procedure for diagnosis and correction in the event of loss of positive gas pressure during shipment.

3.6 TRANSFORMER DRY-OUT

Notwithstanding any differences from the procedures outlined above, the transformer shall be received by the Contractor at the railhead and subsequently transported to the project site for subsequent assembly by the contractor. It is not anticipated that it will be necessary to dry-out the transformer; however, if gas pressure has been lost during shipment or shipping damage is suspected, this dry-out may be necessary. If it becomes necessary to dry-out any part of the transformer, the Contractor shall perform all such operations as required at no additional cost to the Government.

3.7 UNLOADING AND SITE MOVEMENT

The Contractor shall off-load the transformer at the Libby Dam Powerhouse, move it approximately 500 feet down the Elevation 2148 service deck, and place it in its permanent storage location by Monolith 26 per the approved Transformer Movement Plan. Details of the transformer service deck are as shown on reference drawings LDP-1-4-3/9 and LDP-1.6-4-2/1. Details of the spare transformer storage location by Monolith 26 are as shown on reference drawings LDP-1-4-2/21, LDP-1.6-4-2/4, and LDP-1.6-4-2/5. In preparation for placement of the transformer by the Contractor, the Government will have removed the transformer 'vault' concrete curbing with aluminum fence, and placed a transformer pad similar in design and construction to the existing pads indicated on reference drawings LDP-1-4-2/21 and LDP-1.6-4-2/5.

3.8 SITE ASSEMBLY

3.8.1 General

The Contractor shall be responsible for the complete assembly and oil filling of the transformer as required for permanent storage, and final field testing. All electrical equipment and supplies, machinery parts, and similar equipment necessary to be stored under cover shall be identified and submitted for approval by the COR. The transformer cooling fans shall not be installed on the radiators for long-term transformer storage. The fans and associated mounting hardware shall remain in their shipping crates and turned over to the Government for indoor storage.

3.8.2 Transformer Site Assembly Procedure

A transformer site assembly procedure shall be submitted for approval, which shall include a step-by-step activity listing and a proposed time line for each specific task. Included in the assembly procedure shall be the procedure for heated oil filling of the transformer under vacuum, with a listing of the equipment to be used. Any activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included. As a minimum, the assembly procedure should include:

(1) Step-by-step assembly of the transformer.

(2) Means for maintaining a slight positive pressure in the transformer tank with the dry nitrogen gas until the start of vacuum filling.

(3) Provide a temporary weather cover over the transformer and purifier. Purge the tank with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. Remove any interior shipping braces. Install and connect the bushings, and cooling radiators.

(4) Hot oil fill the transformer under vacuum to the normal operating level per the manufacturer's requirements.

(5) Test the CT ratio and polarity in accordance with IEEE C57.13, (paragraphs 6.1.4 and 6.4).

(6) Check the operation of the rapid pressure rise relay.

(7) Pressure test the complete transformer with pressure at the top of the tank at 4 psi for not less than four hours with oil at the normal level in the tank. Check for oil leaks or a reduction in pressure which would signify a gas leak.

(8) Field test the transformer per the requirements of paragraph 3.10, “FIELD TESTS”. All field tests to be performed, including their sequence, method, and acceptance criterion shall be included in the assembly procedure.

3.8.3 Handling and Installation of Transformer Oil

The Contractor will be required to provide a high-vacuum type oil purifier for processing the transformer oil under vacuum and heat during filling of the transformer tank after moved to its permanent storage location, in accordance with the site assembly procedure. After filling with oil, the transformer shall be thoroughly dried by vacuum processing with circulated heated oil per the requirements of the approved transformer site assembly procedure. No Government provided power source will be available to the Contractor for this equipment. The oil supplied under these specifications will be handled from the tank truck to the transformer via the high-vacuum purifier. The oil shall be tested upon arrival to the site prior to filling of the transformer. If the tanker truck has separate oil storage sections, each section containing oil shall be tested. The tests shall comply with the requirements of SECTION 16277 (paragraph 2.14.3, "Chemical, Physical and Electrical Characteristics") and a Transformer Oil Field Test Report shall be submitted for approval prior to filling. Any nonconformance with the required oil characteristics shall be remedied, at no cost to the Government, by a process submitted for approval. The Contractor shall provide any temporary oil storage facilities required for handling and processing the transformer oil. The Contractor shall submit an oil spill plan and provide the necessary equipment to contain an oil spill, as required in SECTION 01355.

3.9 TOUCH-UP PAINTING

Equipment damaged or abraded in shipment shall be thoroughly cleaned, and the damaged areas shall be given one coat of primer and one finish coat of paint. All finished surfaces to receive primer on which the factory coating has deteriorated or been damaged shall be cleaned by means of solvents, degreasers, light sanding or polishing with 240 grit aluminum oxide paper or cloth moistened with Kerosene, or other approved means which removes all grease, paint markings, dirt, rust, and other foreign substances. Appropriate measures shall be taken to protect adjacent surfaces and equipment from overspray or paint splatter. The use of wet or dry cloths or paper shall be as approved by the COR on an individual basis. Primer paint and finish coats shall be as specified in SECTION 16277 (paragraph 3.3, "FACTORY CLEANING AND PAINTING").

3.10 FIELD TESTS

After the transformer has been filled with oil, the bushings installed, and assembly of the transformer is complete, the Contractor shall, under the supervision of the transformer manufacturer's erecting engineer, perform field tests as approved in the Transformer Site Assembly Procedure. The Contractor shall furnish five certified copies of the Transformer Field Test Report. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The following tests shall be performed on the transformer prior to final acceptance by the Government:

(1) Winding insulation resistance of each winding to ground and between windings (Megger Test).

(2) Power Factor test of each transformer winding.

(3) Transformer Turns Ratio test (TTR) on each tap.

(4) Transformer oil (combustible gas-in-oil).

(5) Power Factor Test of each transformer bushing.

(6) Leakage Reactance Measurement Tests. Leakage reactance measurement tests shall be performed between the high-voltage winding and the low-voltage winding, using the same model test equipment and methods as used in the manufacturing facility. The leakage reactance test results shall not deviate more than 0.5 percent as compared to the factory test reports. Deviations in excess of 0.5 percent shall be explained to the satisfaction of the COR, and may be grounds for requiring an internal inspection of the transformer by the Contractor, at no expense to the Government, to determine the cause.

(7) Sweep Frequency Response Analysis Test. A sweep frequency response analysis (SFRA) test shall be performed, using the same equipment and methods as used during the transformer factory acceptance testing. The proposed SFRA test equipment, setup, and test procedure shall be included in the field test procedures submittal. The SFRA test results for each unit shall be compared with the factory acceptance test "baseline" results, to determine the integrity of the core and winding structure after shipment from the manufacturing facility. The SFRA data obtained during the factory acceptance testing shall be loaded into the test equipment software to facility wavetrace comparisons. Wavetrace comparisons are expected match closely, with little differences between matched scans. Wavetrace comparisons that do not match closely shall be explained to the satisfaction of the COR, and may be grounds for transformer rejection, requiring an internal inspection of the transformer by the Contractor to determine the cause of the cause of the deviations, or requiring the transformer to be sent back to the manufacturing facility for repair at no expense to the Government.

3.11 ERECTING ENGINEER SERVICES

The transformer manufacturer's erecting engineer shall be responsible for the transformer, and for the oversight and correctness of instructions given during the assembly and installation of the transformer in preparation for permanent storage. The erecting engineer shall keep an Erecting Engineer's Record of all data taken during site assembly and installation, and shall submit to the Government one copy either on request or on completion of all site work. The erecting engineer shall be responsible for performance of the following work:

(1) Witness and guide off-loading and loading of the transformer at the rail siding, and off-loading from the transport truck at the Libby Dam powerhouse

(2) Witness and guide the hauling of the transformer by truck between the rail siding and the Libby Dam powerhouse.

(3) Witness the movement of the transformer at the Libby powerhouse into its final storage location.

(4) Witness and guide the assembly of the transformer, including the oil filling process.

(5) Witness and guide the final acceptance testing of the transformer.

(6) Perform training of Government personnel as described, below.

3.12 CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL

Immediately following placement of the transformer into its permanent storage location and completion of all field tests, the Contractor shall conduct a course at the Libby powerhouse in the theory, operation, and maintenance of the power transformer. The actual date in which the training is to be performed shall be coordinated with the Libby powerhouse personnel and the COR. The course shall include theory of basic circuits, the transformer system trouble analysis, and operations. Particular attention shall be paid to the accessories listed in SECTION 16277 paragraph 2.8, "ACCESSORIES". The course shall be of 4 hours minimum duration for approximately 10 Government personnel. Course material shall include the use of site specific Operations and Maintenance Manuals, to the maximum extent possible. The Government may videotape the training session for future use by the Government. The Contractor shall submit a Training Outline of the material to be covered, and a proposed schedule. In addition to this formal training, the Contractor shall make available during the same day 4 hours of 'one-on-one' training with powerplant personnel, as required.

-- End of Section --

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SECTION 16277

CLASS II POWER TRANSFORMER

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SECTION 16277

CLASS II POWER TRANSFORMER

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section covers the supply of one three-phase generator step-up (GSU) power transformer rated 192,000/256,000 kVA, 230 kV GrdY high-voltage, 13.2 kV-13.2 kV low-voltage, Class ONAN/ONAF cooling.

1.2 DESCRIPTION OF WORK

The Contractor shall be responsible for the design, manufacture, and factory testing one three-phase GSU power transformer to be used as a spare at the Libby Dam powerhouse. The general arrangement of the existing transformers, operating locations, and interconnections with the existing powerhouse equipment are as shown in the reference drawings. All transformer movement and site work performed at the Libby Dam powerhouse shall be witnessed by the manufacturer's erecting engineer, as required in SECTION 01600. The transformer shipment, hauling and site assembly are as specified in SECTION 01600. The spare transformer to be provided shall be designed with dimensions and locations of equipment and devices the same as the existing Libby Dam powerhouse Bank T1 transformer to the maximum extent possible, unless otherwise specifically indicated, herein.

1.3 REFERENCED PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C29.1	(1988; R 2002) Test Methods for Electrical Power Insulators

ASTM INTERNATIONAL (ASTM)

ASTM A 53	(2004) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 343	(1999) Standard Test Method for Alternating-Current Magnetic Properties of Materials at Power Frequencies Using Wattmeter-Ammeter-Voltmeter Method and 25-cm Epstein Test Frame
ASTM A 718	(1991) Standard Test Method for Surface Insulation Resistivity of Multi-Strip Specimens
ASTM D 923	(1997) Sampling Electrical Insulating Liquids
ASTM D 1533	(2000) Water in Insulating Liquids (Karl Fischer Reaction Method)

ASTM D 3487	(2000) Mineral Insulating Oil Used in Electrical Apparatus
ASTM D 4059	(2000) Analysis of Polychlorinated Biphenyls in Insulating Liquids by Gas Chromatography

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1	(2000) Welding Procedure and Performance Qualification

ASME INTERNATIONAL (ASME)

ASME B1.1	(2003) Unified Inch Screw Threads (UN and UNR Thread Form)
ASME B1.20.1	(1983; R 2001) Pipe Threads, General Purpose, Inch
ASME B16.1	(1998) Cast Iron Pipe Flanges and Flanged Fittings
ASME B16.24	(2001) Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 400, 600, 900, 1500, and 2500

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR PT 1926	(2003) Safety and Health Regulations for Construction

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.12.00	(2000) General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.12.70	(2000) Standard Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.12.80	(2002) Terminology for Power and Distribution Transformers
IEEE C57.12.90	(1999) Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.13	(1993) Requirements for Instrument Transformers
IEEE C57.19.00	(1991; R 1997) Standard General Requirements and Test Procedures for Outdoor Power Apparatus Bushings
IEEE C57.19.01	(2000) Performance Characteristics and Dimensions for Outdoor Apparatus Bushings

IEEE C62.11	(1999) Standard for Metal-Oxide Surge Arresters for AC Power Circuits (> 1kV)
IEEE 693	(1997) IEEE Recommended Practice for Seismic Design of Substations

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-70	(1998) Cast Iron Gate Valves, Flanged and Threaded Ends
MSS SP-80	(2003) Bronze Gate, Globe, Angle and Check Valves

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(1997) Enlcosures for Electrical Equipment (1000 volts Maximum)
NEMA AB 3	(2001) Molded Case Circuit Breakers and Their Application
NEMA C57.12.10	(1997) Transformers - 230 kV and Below, 833/958 Through 8,333/10,417 kVA Single-Phase, and 750/862 Through 60,000/80,000/100,000 kVA Three-Phase Without Load Tap Changing, and 3,750/4,687 through 60,000/80,000/100,000 kVA with Load Tap Changing Safety Requirements
NEMA C80.1	(1994) Rigid Steel Conduit - Zinc Coated (GRC)
NEMA CC 1	(1993) Electrical Power Connection for Substations
NEMA FB 1	(2001) Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
NEMA ICS 2	(2000) Industrial Controls and Systems: Controllers, Contactors, and Overload Relays Rated 600 Volts
NEMA SG 4	(2000) Alternating-Current High-Voltage Circuit Breaker
NEMA WC 5	(1992; Rev 2 1996) Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
NEMA WC 70	(1999) Non-Shielded Power Cables Rated 2000 Volts or less for the Distribution of Electrical Energy

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2005) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 1	(2000) Flexible Metal Conduit
UL 467	(2004) Grounding and Bonding Equipment
UL 514B	(2004) Fittings for Cable and Conduit
UL 886	(1994; Rev thru Apr 1999) Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. The following shall be submitted in accordance with SECTION 01330, "SUBMITTAL PROCEDURES", unless otherwise indicated below:

SD-02 Shop Drawings

1. Outline, Assembly and Detail Drawings; G, HDC

Outline, assembly and detail drawings of all equipment to be furnished under the contract, together with final weights of the equipment and overall dimensions, shall be submitted for approval within 90 calendar days after date of award to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. These drawings shall include the following, at a minimum:

a. Transformer nameplate information.

b. Overall dimensions and layout of the assembled transformer, including structural supporting base, jacking locations, lifting locations, pulling-eye locations, conservator tank, seismic anchoring, and clearances required for untanking or disassembling the transformer, details of gasketed joints, and welded joint details.

c. Locations of all bushings and ancillary equipment including current transformers, valves, devices, gauges, relays, terminal cabinets, radiators and fans, conduit, and junction boxes.

d. Transformer winding configuration diagrams.

e. Schematic and wiring diagrams, and connection diagrams showing terminal block and conductor designations shall be made as seen by an observer of the actual equipment arrangement. Space shall be provided for addition of devices where mounting space exists on the structure.

2. Installation Drawings; G, HDC

Installation drawings as required for the installation of the transformer shall be submitted for approval within 120 calendar days after contract award. Included in these drawings shall be the proposed seismic anchorage details. (see paragraph 2.1.5.1, "Seismic Anchorage Design").

SD-05 Design Data

1. Descriptive Data; G, HDC

Descriptive data or catalog data of all accessory devices and ancillary equipment provided with the transformer shall be submitted for approval within 90 calendar days after date of award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications.

2. Seismic Anchorage Design Calculations; G, HDC

Design calculations performed and stamped by a qualified civil or structural engineer with professional registration, demonstrating conformance of the transformer seismic anchorage design with the specification requirements, shall be submitted for approval within 90 days after date of contract award. (see paragraph 2.1.5.1, "Seismic Anchorage Design.)

SD-06 Test Reports

1. Transformer Factory Acceptance Test Report; G, HDC

The transformer factory acceptance test report shall be submitted for approval not later than 30 calendar days following completion of the factory acceptance tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

2. Bushing Design Tests; G, HDC

The transformer bushing design test reports shall be submitted for approval not later than 30 calendar days following completion of the tests (see paragraph 3.2.3.1, "Bushing Design Tests"). If certified copies of previously conducted bushing design tests are submitted in-lieu of new test results, they shall be submitted not later than 180 calendar days prior to delivery of the transformer.

3. Bushing Routine Tests; G, HDC

The transformer bushing routine test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.3.3, "Bushing Routine Tests").

4. Bushing Current Transformer Tests; G, HDC

The transformer bushing current transformer test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.3.4, "Bushing Current Transformer Tests").

5. Surge Arrester Design Tests; G, HDC

The surge arrester design test reports shall be submitted for approval not later than 30 calendar days following completion of the tests (see paragraph 3.2.4, "Surge Arrester Tests"). If certified copies of previously conducted bushing design tests are submitted in-lieu of new test results, they shall be submitted not later than 180 calendar days prior to delivery of the transformer.

6. Surge Arrester Conformance Tests; G, HDC

The surge arrester conformance test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.4, "Surge Arrester Tests").

SD-07 Certificates

1. Transformer Seismic Capability Certification; G, HDC

The transformer seismic capability certification, supported by testing or analysis, shall be submitted for approval within 90 days after date of contract award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. (see paragraph 2.1.5, “Seismic Requirements”)

2. Transformer Oil Certification; G, HDC

Transformer oil certification shall be submitted for approval a minimum of 14 calendar days prior to the start of factory tests. (see paragraph 2.14.1, "Quantity and Transformer Oil Certification").

3. Notification of the Date of Factory Tests; G, HDC

The contractor shall notify the COR, in writing, 21 calendar days in advance of when the transformer will be ready for factory acceptance tests, so that the tests may be witnessed by a Government Representative. If factory testing in a foreign country is proposed, the Contractor shall notify the COR in writing of the preliminary testing dates, not later than 60 days prior to the start of factory tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

SD-08 Manufacturer's Instructions

1. Factory Test Procedures; G, HDC

The transformer factory test procedures shall be submitted for approval not later than 60 calendar days prior to the start of the factory acceptance tests (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

PART 2 PRODUCTS

2.1 TYPE AND RATING

2.1.1 General

The transformer to be furnished under these specifications shall be designed as a spare transformer to replace the existing Westinghouse three-phase GSU transformers presently in-service at Libby Dam. The transformer shall be a three-phase, three winding oil immersed type suitable for outdoor operation. The transformer shall be self-cooled/forced air-cooled type, Class ONAN/ONAF, and shall be of a design that has an established record of satisfactory operation with the type of oil preservation system specified.

2.1.2 Transformer Limiting Dimensions and Equipment Arrangement

The transformer design, configuration, dimensions, and interconnections shall be the same as the existing Westinghouse GSU transformer, as indicated on the Westinghouse Electric reference drawings ABM986-01 and ABM986-02, facilitating the future installation of the transformer as a spare in the existing transformer vaults with a minimum of field modifications. The dimensions of the transformer shall not exceed the dimensions of the existing transformer, as shown on the reference drawings. Particular attention shall be paid to the following to assure correct interface with the Libby Powerplant:

(1) Low-voltage bushing throat connections. The location, dimensions, and flanges of the low-voltage bushing throats shall be the same as the existing transformer to assure proper interconnection with the existing isolated-phase bus.

(2) High-voltage and high-voltage neutral bushings. The position and location of the terminals of the high-voltage and high-voltage neutral bushings shall be the same as the existing transformer to assure proper interconnection with the existing terminal connectors.

(3) Control cabinet. The location and position of the transformer control cabinet shall be the same as the existing transformer to assure proper alignment directly above the existing embedded conduit, and allow for proper interconnection.

(4) Structural supporting base. The structural supporting base of the transformer shall allow for placement on the existing transformer pads, as indicated.

2.1.3 Requirements

Except as otherwise specified herein, the transformer, accessories, and spare parts shall conform to the applicable requirements of IEEE C57.12.00, IEEE C57.12.70, IEEE C57.12.80 and IEEE C57.12.90; and NEMA C57.12.10. Although the rating of the transformer exceeds the rating governed by NEMA C57.12.10, specific requirements included herein referencing NEMA C57.12.10 shall be met.

2.1.4 Ratings and Electrical Characteristics

The ratings and electrical characteristics of the transformer shall be as follows:

DESCRIPTION	230Kv TRANS RATINGS
Continuous ratings, at 65°C, of the high-voltage winding (H) of all taps, kVA	
a. ONAN Rating	192,000
b. ONAF Rating	256,000
Continuous ratings, at 65°C, of each half of the low-voltage windings (X and Y), kVA	
a. ONAN Rating	96,000
b. ONAF Rating	128,000
Frequency	60 Hz
Number of phases	3
Rated voltage, kV	
a. High-voltage winding	230
b. Each half of the low-voltage winding	13.2
Winding Connections	
a. High-voltage winding	Grounded-Wye
b. Low-voltage winding	Delta
Impedance, percent	
a. At ONAN rated current between the high-voltage winding (H) and the low-voltage winding (X), 96,000 kVA base (subject to IEEE tolerances)	7.6
b. At ONAN rated current, between the high-voltage winding (H) and the low-voltage winding (Y), 96,000 kVA base (subject to IEEE tolerances)	7.6
c. At ONAN rated current, between the two halves of the low-voltage winding (X and Y), 96,000 kVA base, (subject to IEEE tolerances)	18
Angular displacement, low-voltage lags high-voltage by, degrees	30
Basic Impulse Insulation Levels (BIL)	
a. Line ends of the high-voltage windings, not less than	825 kV
b. Neutral ends of the high-voltage windings, not less than	150 kV
c. Low-voltage windings, not less than	110 kV
Winding Taps	
a. Taps in low-voltage windings	None
b. Taps (full capacity) in high-voltage windings	
1) Tap 'A' (percent of high-voltage rating)	105.0
2) Tap 'B' (percent of high-voltage rating)	102.5
3) Tap 'C' (percent of high-voltage rating)	100.0
4) Tap 'D' (percent of high-voltage rating)	97.5
5) Tap 'E' (percent of high-voltage rating)	95.0
Efficiency, percent Minimum efficiency at ONAN rated kVA and 1.0 power factor, with both halves of the 13.2 kV winding equally loaded	99.76
Audible Sound Level, dB Maximum average sound level at rated voltage and frequency, with all cooling fans in operation, as measured in accordance with paragraph 3.2.2.e.	74
Weight, pounds	
a. Maximum transformer shipping weight	365,000
b. Maximum transformer total weight, completely assembled and oil-filled with all accessories installed	583,360

2.1.5 Seismic Requirements

The transformer to be furnished under this contract shall be constructed and assembled to withstand the maximum seismic forces specified. Contractor shall provide certification supported by testing or analysis stating the seismic capability of the equipment.

2.1.5.1 Seismic Anchorage Design

The seismic anchorage for the transformer shall be designed by the Contractor in accordance with the requirements of this specification. The Contractor shall provide anchorage design calculations performed and stamped by a qualified civil or structural engineer with professional registration. Anchorage shall be designed without relying on effects of friction and shall provide a factor of safety of 1.3 against overturning. Existing concrete strength shall be taken as f'c = 3,000 psi. The Contractor shall provide recommended anchorage details, including anchorage locations, maximum tension and shear per anchor bolt, and anchor bolt specifications. Detail drawings shall be stamped by the engineer performing the calculations. Support details shall be compatible with a skid mount design as shown in reference drawing LDP-1.6-4-2/5.

2.1.5.2 Seismic Code Requirements

The seismic design shall be in accordance with Section 1621, "Architectural, Mechanical and Electrical Component Seismic Design Requirements" of ICC IBC, or the provisions in 1997 IEEE 693 Annex D, whichever produces the more adverse seismic effects. For ICC IBC, use Seismic Use Group III, spectral acceleration S_{DS} = [0.355], I_P = 1.50, and z=h=1. For IEEE 693, the seismic qualification level shall be moderate.

2.2 THERMAL DESIGN

The temperature rise above ambient temperature of the transformer or parts thereof, when tested in accordance with its ratings, shall not exceed the limits of observable temperature rise for oil immersed apparatus as stated in IEEE C57.12.00 (paragraph 5.11.1). The winding temperature rise by resistance shall not exceed 65 degrees-C, and the hottest spot winding temperature rise shall not exceed 80 degrees-C on the tap connections that give the highest losses, with all coolers in operation.

2.3 CORE

The transformer core shall be constructed of high quality, non aging, cold rolled, grain oriented steel especially suitable for the purpose. The core steel laminations shall not exceed 0.011 inch in thickness, and shall be M3 grade equivalent, or better. The use of paper insulation in the core will not be acceptable. Electrical core steel core loss, rms exciting power, rms and peak exciting current, and ac permeability shall be tested in accordance with ASTM A 343. Each roll of sheet steel used shall have the surface insulation resistivity tested in accordance with ASTM A 718. The core shall be carefully assembled and rigidly clamped to insure adequate mechanical strength to support the windings and to prevent shifting of the laminations during shipment, and also to reduce vibration to a minimum under operating conditions. Core joints shall be interleaved. An external bushing for core grounding shall be provided and be provided with a removable strap between the bushing terminal and the tank wall. The bushing shall be rated for not

less than 5 kV and shall be located and labeled to avoid confusion with other bushings. The bushing shall be protected with a removable weatherproof metal cover. The transformer core design and construction methods shall be in such a manner to assure that the average sound level due to operation of the transformer and accessories will not exceed 74 dB at rated voltage and frequency as measured in accordance with IEEE C57.12.90.

2.4 WINDINGS

2.4.1 General

The transformer shall be manufactured with three windings meeting the requirements of paragraph 2.1.4, consisting of one high voltage winding (H) per phase and dual 13.2 kV low-voltage windings (X and Y) per phase. The winding conductors shall be of copper, and shall be of a circular coil construction. Consideration shall be given to all factors of service, such as high dielectric and mechanical strength of insulation, coil characteristics, and minimum restrictions to free circulation of oil. Coils shall be made up, shaped, and braced to provide for expansion, contraction, and shrinkage due to temperature changes and aging in service in order to avoid abrasion of insulation and to provide resistance to movement and distortion caused by abnormal operating conditions. Adequate barriers shall be provided between windings and core and between high-voltage and low-voltage windings. End coils shall have additional protection, if required, against normal line disturbances.

2.4.2 Insulation Levels

The transformer shall be designed for BIL of the windings as specified in paragraph 2.1.4, "Ratings and Electrical Characteristics", and shall be capable of withstanding IEEE Standard dielectric tests, in accordance with paragraph 3.2.2, "Power Transformer Tests", corresponding to the specified winding insulation levels.

2.4.3 Short Circuit Capability

The transformer shall be capable of withstanding without injury the mechanical and thermal stresses caused by short circuits on the external terminals of any winding or windings, with rated voltages maintained across the terminals of all other windings intended for connection to sources of energy, under the conditions listed in IEEE C57.12.00 (paragraph 7.1.1).

2.5 NO-LOAD TAP CHANGER

The transformer shall be equipped with an external, manually operated tap changer for changing connections to the taps in the high voltage windings. Taps will be changed only when the transformer is de energized. The tap changer control shall be mounted on the transformer tank at approximately 48 inches above the base of the transformer and shall include an operating hand wheel, indicating pointer and dial, and means for locking the tap changer in any desired tap position. The operating hand wheel, if removable, shall be mechanically interlocked with the tap mechanism to prevent its removal when the mechanism is not in a completed tap position. Transmission of motion from operating hand wheel shaft to taps shall be by interaction of rigid members. The contacts shall be capable of withstanding the full short circuit current of the transformer without injury. The tap changing

mechanism shall render it impossible to leave a winding open or short circuited when the operating wheel is placed in a locked position.

2.6 TANK

2.6.1 Construction

The transformer shall be provided with an oil-tight steel tank, with oil-tight covers per the requirements of NEMA C57.12.10 (paragraph 5.8). The tank shall be provided with one or more unobstructed manholes in the cover with minimum dimensions of 24 inches by 24 inches, or 24 inches minimum diameter, to afford easy access to the lower ends of bushings, terminals, and the upper portions of the coils. Suitable positioning guides shall be provided inside the tank to assure the core and windings are in the correct position during assembly. The main transformer tank and any attached compartment that is subjected to operating pressures shall be designed and constructed to withstand, without leakage or permanent deformation, an internal pressure not less than 10 psi. The tanks shall be designed and constructed for vacuum filling (essentially full vacuum) in the field. All valves, fittings and piping affected by vacuum filling shall be of correct design and construction for such filling. Auxiliary compartments such as reservoir tanks, when not designed for vacuum filling, shall be so designated, and suitable isolating valves shall be provided. The joints between the tank and cover, and between tank sections shall be welded, and the design of the joint shall prevent weld splatter from entering the inside of the tank. The Contractor shall submit for approval full information covering details of welded joints.

2.6.2 Gasketing

Gaskets between metal surfaces shall be set in grooves or held in position by retainers so arranged that all parts are metal to metal. The gaskets shall be made of a resilient material that will not deteriorate under the action of hot oil and will remain oil-tight. Nitrile and cork-neoprene gaskets are acceptable. Gaskets of cork or neoprene only will not be allowed. Details of proposed gaskets shall be furnished.

2.6.3 Lifting and Moving Facilities

2.6.3.1 Lifting Facilities

Design loads for lifting eyes, lugs, or hooks shall be two times the actual load to allow for possible unequal lifting forces. Safety factor for lifting eyes, lugs, or hooks (using design loads) shall be in accordance with NEMA C57.12.10 (paragraph 5.3.1). Lifting eyes, lugs, or hooks shall positively keep the lifting cable in place even when the cable is slack. Each transformer shall be provided with the following lifting facilities:

(1) Lifting attachments on the tank cover.

(2) Adequate means for lifting the core and coil assembly from the tank.

(3) Lifting lugs or hooks on the tank adequate for lifting the complete transformer, including radiators, filled with oil.

2.6.3.2 Moving Facilities

Moving features shall be furnished as required for moving the transformer to its final storage location as shown, and shall be in accordance with NEMA C57.12.10 (paragraph 5.3.3).

2.6.4 Valves

The transformer shall be provided with suitable valves, conforming with NEMA C57.12.10 (paragraph 5.1.5), except as noted below, for use in filling, draining, isolating an on-line oil gas analyzer, and maintaining the transformer and cooling equipment. All oil valves shall be designed for use with insulating oil and shall hold hot oil without leaking. Threaded connections between the valves and the tank will not be allowed. Valves shall conform to MSS SP-70, Type I or II, Class I; or MSS SP-80, Type II, Class A, whichever applicable. All valves shall be brass or bronze, and flanged. Valves shall be provided for the following:

(1) Upper filter connection. A 2-inch globe type valve shall be located such that it can be used to fill the transformer with oil while the transformer is under vacuum.

(2) Vacuum pump connection. A 3-inch globe type valve shall be located on the tank cover for use in connecting a vacuum pump during the vacuum filling process.

(3) Main drain. A 3-inch globe type valve shall be located at the extreme bottom of the tank for use in gravity draining of the transformer.

(4) Oil sampling valve. Sampling the oil from the extreme bottom of the tank. The sampling valve shall be ball type, with a threaded cap or plug on the discharge end. This valve may be located at the main drain valve location.

(5) Lower filter connection. A 2-inch globe type valve shall be located at the extreme bottom of the tank.

(6) Tank air vents. Valves shall be provided for venting of the bushing adapters.

(7) Isolation valves. The following isolation valves shall be provided:

(a) Radiators. Valves shall be provided on the tank at the inlet and outlet of each radiator to permit removal without draining the oil from the tank.

(b) Conservator tanks. Valves shall be provided for isolation of the conservator tank from the main transformer tank, and for complete gravity draining of the conservator tank oil reservoir.

(c) Rapid pressure rise relay. Isolating the pressure detector relay.

2.6.5 Connections

All bolts, studs, machine screws, nuts, and tapped holes designed for customer connection shall be in accordance with ASME B1.1. Threads for sizes 1/4-inch to 1-inch, inclusive, shall be NC or UN series. The sizes and threads of all valves, pipe and fittings, conduit and fittings, tubing and fittings, and connecting equipment, shall be in accordance with ASME B1.20.1. Manufacturers' standard threads and construction may be used on small items which are integrally replaceable, except that threads for external connections to these items shall meet the above requirements.

2.6.6 Steel Pipe and Fittings

Steel pipe shall conform to ASTM A 53, Weight A, Class 2. Dimensions of terminating flanges shall conform to ASME B16.1 and ASME B16.24.

2.6.7 Grounding

Two ground pads shall be provided on the transformer for grounding the tank and base. The locations of the existing transformer ground pad connections are as indicated on the drawings. The grounding provisions shall be in accordance with NEMA C57.12.10 (paragraph 5.5).

2.6.8 Personal Fall Arrest System

The top of the transformer tank shall be covered with a non-slip material, the same color as the tank walls. A fall protection system, consisting of removable safety posts and railing or wire rope, shall be provided. The post mounting shall be designed so as to not collect water. The fall protection system shall be designed to meet the applicable provisions of 29 CFR PT 1926.502.

2.7 BASE

2.7.1 Steel Supporting Base

The transformer shall be provided with a structural steel supporting base designed for pad mounting on the existing transformer pads, as indicated on the drawings, without wheels. The base shall be suitable for moving the transformer on rollers or skids when completely assembled and filled with oil, and shall be designed to permit moving the transformer in a direction parallel to either centerline, with suitable pulling eyes provided.

2.7.2 Jack Ports

The transformer base shall be provided with jack ports, bosses, or lugs, to permit jacking the complete transformer filled with oil per the requirements of NEMA C57.12.10 (paragraph 5.3.4), using the hydraulic jacks specified in paragraph 2.18.1, "Jacks". The design loads for jacking bosses or lugs shall be at least two times the actual loads to allow for possible unequal jacking forces.

2.7.3 Center of Gravity

The base shall be so designed that the center of gravity of the transformer, with or without oil as normally prepared for shipment, will not fall outside the base support members for a tilt of the base of 15 degrees from the horizontal.

2.8 ACCESSORIES

2.8.1 General

Dials, indicators, and gages installed on the transformer shall be mounted on the low-voltage side at a height of approximately 60 inches above the base of the transformer, unless otherwise indicated, and arranged for convenient reading standing at the level of the base. The following accessory devices shall be furnished, and shall be included in the price for the transformer. Accessories shall be provided per the requirements of NEMA C57.12.10 (paragraph 5), unless otherwise indicated.

2.8.2 Liquid Level Indicators

Each transformer constant-pressure, reservoir tank shall be provided with a magnetic-type liquid level indicator located on the side of the reservoir tank facing the transformer vault opening, equipped with a circuit-closing low-level alarm contact suitable for use with an ungrounded 125 Vdc circuit. The dial shall be marked to show the 25 degrees-C oil level and the maximum and minimum oil levels.

2.8.3 Liquid Temperature Indicator

The transformer shall be provided with a dial-type indicating thermometer (liquid temperature indicator) with its sensing element located in the path of the hottest oil. The thermometer dials shall cover a range of 0-to-120°C and shall be equipped with adjustable circuit-closing alarm contacts suitable for use with an ungrounded 125 Vdc circuit. An additional thermowell shall be provided for future use in monitoring bottom oil temperature, located in the vicinity of the liquid temperature indicator gauge.

2.8.4 Winding Temperature Indicators

2.8.4.1 General

One winding temperature indicator (WTI), with associated equipment, for use in remote indicating and recording or logging of the temperatures of the transformer phase windings, and for switching in the cooling control circuits shall be provided for each low-voltage winding. The WTI equipment shall be responsive to the current in each phase winding and to the top oil temperature, shall reflect the approximate hot-spot temperature of each winding, and shall be provided with a means of calibration. The WTI equipment for each phase shall include the following:

(1) A current transformer installed in the low-voltage windings, supplying current proportional to the load.

(2) A closed thermowell located inside the transformer case located in the hottest oil near the top of the tank.

(3) A heating coil in the thermowell energized by the current transformer.

(4) A sensing element located in the thermowell for operation of a dial indicator.

(5) A resistance temperature detector (RTD) in the thermowell for remote indication of winding temperature.

(6) All necessary wiring and capillary tubing.

2.8.4.2 Dial Indicators and Switches

Each WTI shall have three electrically-independent, self-resetting contacts suitable for use on 125 V ungrounded dc circuits. The contacts shall operate to provide stages of cooling, annunciation, and control actions as indicated in paragraph 2.16, "COOLING EQUIPMENT". The indicator shall be mounted to allow resetting of the temperature switches without the use of steps or ladders.

2.8.4.3 Resistance Temperature Detectors

Each WTI equipment shall include a copper three-wire RTD, with drain shield, having a resistance of 10-ohms plus-or-minus 0.2 percent with a temperature coefficient of 0.003855 plus-or-minus 0.000019 ohms/ohm-C at 25 degrees Celsius. The RTD will be used with existing temperature recording located in the powerhouse control room switchboard.

2.8.4.4 Leads

The leads from the WTI equipment shall be brought out through the transformer tank in watertight and oiltight conduit fittings. All leads from each WTI equipment shall terminate in the transformer control cabinet.

2.8.5 Rapid Pressure Rise Relay

The transformer shall be provided with a relay to detect a sudden rise in oil or gas pressure in the transformer tank, designed to operate on rate of pressure change. The relay shall be insensitive to pressure pulses caused by electrical disturbances such as magnetizing inrush currents or mechanical shocks, but highly sensitive to small arcs which would not ordinarily cause a pressure relief device to operate. Connection to the transformer oil space shall be made through an approved valve. The relay shall have at least one set of 'Form C' contacts suitable for use on a 125 Vdc ungrounded circuit. A seal in relay suitable for service on a 125V ungrounded DC source shall be provided with the rapid pressure rise relay for use in latching the output relay for initiating a transformer trip. Means shall be provided to manually actuate the sensing mechanism of the relay without exposing the oil to air or gas, draining any oil from the transformer, or injecting any gas or liquid into the oil system.

2.8.6 Pressure Relief Device

2.8.6.1 General

The transformer tank shall be provided with a self resetting, mechanical-type high-flow pressure relief device to automatically relieve internal pressure and to protect the tank against rupture due to arcing below the surface of the oil. The relief device shall be capable of withstanding full vacuum without rupture or loss of accuracy. This device shall be constructed to minimize oil discharge during operation, and to exclude air and water after it opens. It shall be mounted over the main tank at or above the normal oil level in the tank. It shall be equipped with a visual indicator and an alarm contact suitable for operation on a 125 VDC ungrounded circuit. The pressure relief device shall be a Qualitrol XPRD, or approved equal.

2.8.6.2 Oil Discharge Piping

Oil discharge piping shall be provided for directing the oil discharged from the pressure relief device to the base of the transformer tank. The oil discharge piping outlet shall be positioned approximately 24-inches above the base of the transformer, and be provided with a screen to discourage entry by animals, birds, and insects. The design of the oil discharge piping, including screen and inspection cover details, shall be included in the manufacturer's shop drawings.

2.8.7 Gas and Oil Actuated Relay (Buchholz)

The transformer shall be provided with a gas and oil actuated relay (Buchholz relay) located in the pipe connecting the transformer tank to the constant-pressure, reservoir tank. Pipe-work shall be so arranged that all gas arising from the transformer shall pass into the relay, and the size and arrangement of pipe-work shall conform with the recommendations of the relay manufacturer. The relay shall have the following features:

(1) The relay shall be manufactured of a corrosion-resistant, oil-tight alloy casting, have flanged housing connections, and shall have graduated inspection glass windows that enable the volume of gas and the contact system to be inspected.

(2) Two floats (one for gas accumulation and one for low oil level) and one flap with counterbalance weight for the detection of oil speed.

(3) A push-button for testing the relay electric circuits.

(4) A pneumatic test device

(5) A gas and oil sampling device shall be provided, and mounted on the high-voltage side of the transformer at a height of approximately 48 inches above the base of the transformer.

(6) The relay shall have independent alarm contacts wired back to the transformer control cabinet that close on collection of gas or at low oil level, and tripping contacts that close following an oil surge. Mercury-based contacts will not be acceptable. The normally-open, electrically separate alarm and tripping contacts shall not be exposed to oil, and shall have a rated nominal current of 2A a.c./d.c. and a rated nominal voltage of 240V a.c./d.c.

(7) Operation of the relay shall be immune to seismic disturbances.

2.8.8 Contacts and Devices

The contacts of all relays, gages, and thermometers shall be insulated from ground and shall be of a positive snap-action type. Separate alarm relay devices may be furnished if desired. Alarm contacts shall be suitable for operation on 125 Vdc ungrounded circuits and rated 0.5 amperes (resistive) at 125 Vdc.

2.9 BUSHINGS

2.9.1 General Bushing Requirements

The transformer shall have three high-voltage, four low-voltage, and one neutral leads brought out from the tank through bushings as specified below. Bushings of the same voltage and current rating shall be interchangeable and, as applicable, except for the core ground bushing (see paragraph 2.3, "CORE"), conform to IEEE C57.19.00 and IEEE C57.19.01. All bushings shall meet the following requirements:

(1) Bushings shall be of recent manufacture and shall be of a type and style currently manufactured by the bushing manufacturer and shall be dimensionally interchangeable with current models of at least one United States manufacturer.

(2) Bushings shall be designed for outdoor service.

(3) The porcelain used in the bushings shall be manufactured by the wet process and shall be homogeneous, free from laminations, cavities or other flaws affecting its mechanical strength or dielectric quality, and shall be well vitrified, tough and impervious to moisture. The glazing of the porcelain parts shall be free from imperfections, such as blisters and burns. The exterior porcelain shell above the mounting flange shall be light gray in color.

(4) Bushings shall be so designed that there will be no stressing of any parts due to temperature changes, and adequate means shall be provided to accommodate conductor expansion.

(5) Bushings shall be gastight and oiltight, and shall seal gastight and oiltight on the transformer tank as applicable.

(6) The power factor of each bushing shall meet the requirements of IEEE C57.19.01 (2000), Table 10 as applicable.

2.9.2 High-Voltage and High-Voltage Neutral Bushings

The high-voltage and neutral bushings provided shall meet the requirements of paragraph 2.9.1, shall be designed to withstand the standard withstand test voltages as indicated in Table 1 of IEEE C57.19.01 (2000), and shall be tested in accordance with paragraph 3.2.3, "Bushing Tests". High-voltage and neutral bushings shall be of the condenser type, oil impregnated and oil-filled, and shall be provided with a suitable oil level gage or indicator and an oil drain. The seal shall be maintained by compression spring assemblies. The exterior porcelain shell shall preferably be manufactured in one piece, but may be of the two-module or three-module type construction that provides an oil tight enclosure for the core. If modules are provided, they shall be fitted with suitable oil-proof gaskets and shall

be held in compression by concentric spring loading. The power factor test facility on high-voltage bushings shall be provided, and shall be suitable for use with a bushing potential device. The high-voltage and neutral bushings shall be rated as follows:

2.9.2.1 High-Voltage Bushings

(1) Insulation class, kV: 230

(2) BIL rating, kV: 900

(3) Minimum current rating, Amperes: 1,600

(4) Creepage distance: Light contamination

2.9.2.2 High-Voltage Neutral Bushing

(1) Insulation class, kV: 34.5

(2) BIL rating, kV: 200

(3) Minimum current rating, Amperes: 1,200

(4) Creepage distance: Light contamination

2.9.3 Low-Voltage Bushings

Low-voltage bushings shall meet the requirements of paragraph 2.9.1 and IEEE C57.19.01 (1991), and shall be tested in accordance with paragraph 3.2.3, "Bushing Tests". They shall be of the oil-impregnated condenser type, the exterior porcelain shell above the mounting flange shall be formed in one piece, and they shall be designed for vertical mounting. Viton gaskets shall be used for the installation of all low-voltage bushings. The low-voltage bushings shall be rated as follows:

(1) Insulation class, kV: 25

(2) BIL rating, kV: 150

(3) Minimum current rating, Amperes: 7,500

(4) Thermal rating, degrees Celsius temperature rise: 125

2.10 BUSHING-TYPE CURRENT TRANSFORMERS

2.10.1 High-Voltage Bushings

Two 1200:5 multi-ratio bushing-type current transformers for relaying service shall be furnished for each transformer high-voltage bushing. All bushing-type current transformers shall conform to the requirements of IEEE C57.13 and NEMA SG 4, and shall have a minimum ANSI relaying accuracy classification of C200. The continuous thermal rating factor shall be 1.33, based upon a 30 degree Celsius average ambient air temperature.

2.10.2 High-Voltage Neutral Bushing

One 600:5 multi-ratio bushing-type current transformers for relaying service shall be furnished for the transformer high-voltage neutral bushing. The bushing-type current transformer shall conform to the requirements of IEEE C57.13 and NEMA SG 4, and shall have a minimum ANSI relaying accuracy classification of C200. The continuous thermal rating factor shall be 1.33, based upon a 30 degree Celsius average ambient air temperature.

2.10.3 Low-Voltage Bushings

No bushing current transformers are required for the low-voltage bushings, except as may be required for the winding temperature indicating equipment.

2.11 BUSHING POTENTIAL DEVICES

Three bushing potential devices in weatherproof cabinets shall be installed on the transformer for operation from the capacitance taps on the 230 kV high-voltage bushings. The devices shall be Class A, in-phase type, conforming to NEMA SG 4, and rated as follows:

(1) Circuit voltage, V: 133,000/230,000 Y

(2) Secondary voltage (main), V: 115 and 66.4

(3) Secondary voltage (aux), V: 115 and 66.4

(4) Frequency, Hz: 60

(5) Wattage: 80

2.12 LOW-VOLTAGE BUSHING THROATS

The transformer shall be provided with a flanged throat surrounding each low-voltage winding bushing, designed to bolt to the exiting isolated-phase bus housing enclosures. The details of the flanges and bolted connections shall be provided, and included on the manufacturer's shop drawings.

2.13 SURGE ARRESTERS

2.13.1 General

Three surge arresters shall be provided for the transformer; one for each 230 kV line connection. The surge arresters shall be of the outdoor station class metal-oxide type suitable for the protection of power transformers and associated equipment from overvoltage produced by lightning and switching operations. The arresters shall operate under usual service conditions (paragraph 4.1 of IEEE C62.11), shall be self supporting, and shall be capable of withstanding wind of 130 kilometers per hour, and 0.5g seismic acceleration in any direction, but not simultaneously. The surge arresters shall conform to the applicable provisions of IEEE C62.11 and NEMA LA 1, including official Standards Proposal LA-P4, and shall meet the test requirements as included in paragraph 3.2.4, "Surge Arrester Tests".

2.13.2 Ratings

The surge arresters shall be designed for use on a three-phase 60 HZ system with voltage ratings and characteristics as specified below:

(1) Maximum continuous line-to-ground operating voltage (MCOV), kV: 140

(2) Duty Cycle Rating, kV: 172

(3) Grounded neutral system: NEMA B

2.13.3 Mounting

Removable brackets shall be provided on the top of the transformer to support the three surge arresters to be provided. The brackets shall provide rigid supports for the arresters, and shall be located so that the line terminals of the arresters will be at approximately the same elevation as the terminals of the transformer high-voltage bushings. The design and location of the surge arresters shall be similar to that of the existing Libby Dam GSU transformers.

2.13.4 Construction

(1) Housing. The arrester units shall be composed of a suitable wet process gray porcelain housing with metal end fittings enclosing the internal parts. The porcelain shall be of wet process, free from laminations, cavities, or other flaws affecting their mechanical or dielectric strength, and shall be well vitrified and nonporous. Seals shall be provided between the porcelain housing and metal end fittings. The metal end fittings shall be attached to the housing with solder or cement as appropriate for the construction used. Each unit shall have a pressure relief diaphragm, constructed to meet the requirements of IEEE C62.11, and rated and tested for Class I pressure-relief test currents.

(2) Conductor Terminals. Each arrester shall be provided with terminal connections conforming to the requirements of paragraph 10.4.1 of IEEE C62.11. The terminals and bolts, nuts, washers, and locking devices which are part of the conductor terminals or are used for attaching terminals to the equipment shall be compatible with either aluminum or copper conductors.

(3) Metal Parts. Exposed metal parts, shall be of corrosion-resistant metal or galvanized iron or steel. All hardware, including bolts, washers, and locking devices, shall be given a protective zinc coating which shall be capable of meeting the tests specified in Section 6 of ANSI C29.1.

(4) Nameplates. Each arrester shall be provided with a corrosion resistant nameplate and, when the arrester is composed of multiple sections, each section shall also have an individual nameplate. The main nameplate shall be attached to the lower arrester unit or base and shall give the information identified in IEEE C62.11.

2.14 OIL

2.14.1 Quantity and Transformer Oil Certification

The Contractor shall furnish all oil required to fill the transformer and oil filled bushings to the proper operating levels as well as the oil

required for factory tests. Prior to shipment of the transformer, Transformer Oil Certification shall be submitted stating that the oil furnished for placing the transformer in service will meet the requirements specified below.

2.14.2 Type of Oil

The grade of insulating oil furnished shall be produced from a predominately naphthenic base crude petroleum, shall be new, and shall be specifically prepared and refined for use in electrical equipment as an insulating and cooling medium. Except for the oxidation inhibitor, the insulating oil shall be free from additives of every kind, either natural or synthetic.

2.14.3 Chemical, Physical and Electrical Characteristics

The insulating oil provided shall be tested in accordance with, and shall meet the test requirements of, ASTM D 3487, Table 1, Type II prior to shipment. In addition to the requirements listed in ASTM D 3487 Table 1, the insulating oil for the transformer and bushings shall contain no Polychlorinated Biphenyls (PCBs) as tested in accordance with ASTM D 4059, and the water content shall not exceed 20 parts-per-million (ppm) as tested in accordance with ASTM D 1533. The Government, at point of delivery, may draw samples in accordance with ASTM sampling standards, for testing to determine whether the oil meets the specifications. Oil so tested and failing to meet the requirements will be removed and replaced by, and at the expense of, the Contractor.

2.14.4 Sampling

Samples for testing shall be obtained as specified in ASTM D 923.

2.14.5 Testing

Chemical, physical, and electrical tests shall be conducted by the Contractor in accordance with the test methods listed in ASTM D 3487, Table 1. Five certified copies of the test reports shall be submitted for approval prior to shipment of the oil.

2.15 OIL PRESERVATION SYSTEM

2.15.1 General

The transformer shall be provided with an air-cell, constant-pressure, reservoir tank oil preservation system, consisting of two oil reservoirs designed for mounting on the transformer tank, with the location and height coordinated with the high-voltage bushing adapters. Each reservoir shall be provided with a sump chamber to collect any impurities.

2.15.2 Inert-Gas for Transformer Processing

Cylinders of nitrogen gas necessary for shipping, installing, flushing and charging the transformer shall be furnished by the Contractor. The nitrogen and cylinders shall conform to IEEE C57.12.00 (paragraph 6.6.3). Freight on returnable cylinders shall be paid by the Contractor and shall be included in the price bid for the transformer.

2.15.3 Air Cell

Each oil reservoir shall contain an air cell arranged to prevent direct contact between the oil and air. The air cell material shall be nylon-impregnated nitrile rubber designed for long life and for service in contact with hot oil. Each air cell shall be vented through a weather-tight breather provided with a suitable desiccant. The desiccant containers shall be located on the transformer tank at a height of approximately 48 inches above the base of the transformer so that the desiccant material can be replaced, refilled, and maintained without removing the transformer from service.

2.15.4 Liquid Level Indicator

The liquid level indicator for each reservoir (see paragraph 2.8.2, "Liquid Level Indicator") shall be arranged to close the set of low-level alarm contacts when the oil level becomes too low or the air cell sinks. The liquid level gauge shall be situated so that it can be read when facing the high-voltage side of the transformer.

2.16 COOLING EQUIPMENT

2.16.1 Radiators

The transformer shall be provided with a sufficient number of radiators to cool the oil properly. The radiators shall be located as indicated on the drawings, shall match the existing transformer radiator configuration and mounting methods, and be located on the tank to insure uniform circulation of the oil through the windings. The radiators shall be constructed of steel tubes or elements welded into steel headers. All welding shall be on the outside of the radiators such that there will be no crevices in which water might collect. The welding and fittings shall be smooth, both inside and out, so as to present no obstruction to the flow of oil inside and to facilitate cleaning and painting on the outside. The radiators shall be designed to withstand essentially full vacuum to permit filling the transformer under vacuum with radiators in place and radiator valves open. Valves shall be installed on each connection to the main tank so that radiators may be removed for repairs without taking the transformer out of service. Provisions shall be made for draining and venting the radiators. Lifting eyes means shall be provided for handling the radiators.

2.16.2 Forced-Air Equipment

Suitable forced-air equipment shall be provided so that the continuous forced-air-cooled capacity of each transformer will be at least 133.3 percent of the self-cooled rating without exceeding the allowable temperature rise specified in paragraph 2.2, "THERMAL DESIGN". The forced-air equipment shall include propeller type fans with guards and direct-connected motors, and a rigid housing with venturi openings, and louvers or baffles, if needed, to direct the air stream against the radiator and to prevent recirculation of discharged air. The propellers shall be balanced cast aluminum and shall provide adequate air delivery with low noise level. The fan motors shall be of splashproof or totally-enclosed construction suitable for continuous service and shall have individual thermal overload protection. The fan motors shall be provided with antifriction bearings having a L10 rating of 40,000 hours minimum. The transformer forced-air equipment shall be designed to assure that the average sound level due to

operation of the transformer and accessories with all fans in operation will not exceed 74dB at rated maximum load, as measured in accordance with IEEE C57.12.90.

2.16.3 Power Supply Equipment

The power supply for fan motors will be Government-furnished, 208/120 V, 4-wire, 3 phase, 60 Hz, as indicated on the contract drawings. One 3 pole, 600 V, molded case circuit breaker of proper current rating, and conforming to NEMA AB 3 shall be provided in the control cabinet for the supply circuit.

2.16.4 Cooling Control Equipment

All necessary protective and control equipment for the fan motors shall be furnished and installed in the transformer control cabinet for the transformer. The control equipment shall be fully automatic, and designed to start and stop the fan motors as the transformer winding temperature requires. A "LEAD-LAG" selector shall be furnished to select which cooling units will operate as the first cooling group, and which cooling units will be controlled automatically to provide the additional cooling capacity, as indicated. The controls shall be designed to de-energize the fans in the event of a transformer failure resulting in fire. Provision shall be made so that it will not be necessary to shut down the entire cooling equipment when removing any cooling group for repairs. Control equipment shall consist of molded-case air circuit breakers and contactors, as required, and shall conform to NEMA ICS 2. Contactors shall be NEMA Size 1 minimum. Auxiliary relays, if required, shall have a contact rating designation of A600 or better. Additional circuit breakers for branch circuit protection of fan circuits shall be provided as required. Air circuit breakers shall be molded-case type, rated not less than 20A, conforming to NEMA AB 3. All cooling control equipment shall be designed per the applicable requirements of the National Electrical Code (NFPA 70).

2.16.5 Elapsed Time Meters

Hour-indicated elapsed time meters shall be provided, as indicated, for each fan cooling group. The time meters shall be of the non-reset type, and have 6-digit registers with counter numbers at least 1/4-inch high. White numbers on black backgrounds shall provide hour indication with the last digit in contrasting colors to indicate tenths of an hour. The enclosure shall be 3-1/2 inches square, and dust resistant. The operating voltage shall be 120 volts ac.

2.17 TRANSFORMER CONTROL CABINET, WIRING, AND CONDUIT SYSTEMS

2.17.1 General

The transformer shall be provided with a control cabinet and a separate detachable conduit entry box mounted in a readily accessible location, as indicated on the contract drawings. The location shall be such that the existing conduit for transformer external control circuits shown on the drawings can be used for the same purpose with this transformer. The control cabinet and detachable conduit entry box shall be of rugged weather-proof Type 304 stainless steel construction, of 14 gauge minimum thickness, with provision for locking. If electrically isolated from the transformer tank by vibration isolators, the control cabinet shall be provided with a

grounding jumper to the transformer tank. External conduit and cable terminal connections for wiring to the transformer control cabinet shall be to the detachable conduit entry box which will facilitate easy disconnection of wiring for moving the transformer without pulling the external cables back into the conduits and without disconnection of the conduits. The conduit entry box enclosure shall contain the terminal blocks for terminations, and a lockable latch-type door for access. These enclosures shall remain unpainted, and "piano-hinges" will not be acceptable for cabinet doors. Devices mounted on the back of hinged panel doors that are not visible from the panel door fronts, shall be mounted such that the device mounting screws do not penetrate the panel doors. Device nameplates shall be made of engraved-aluminum with black lettering.

2.17.2 Wiring

2.17.2.1 General

All enclosures and devices shall be completely wired to designated terminal blocks for connection to external devices. The Contractor's standard cables and methods of cable terminations may be used for wiring and terminations performed at the factory, however, splices will not be permitted. Any wiring extending beyond the control cabinet and conduit entry box shall be terminated at 600 V terminal blocks with 30 A capacity. Special attention shall be given to terminal wiring arrangements on the terminal blocks to permit individual conductors of each external cable to be terminated on adjacent terminal points. The wire (terminal point) designations used on the Contractor's wiring diagrams may be according to the Contractor's standard practice; however, wire and cable designations for identification of external circuits shall correspond with Government's designations, as indicated on the contract drawings.

2.17.2.2 Control Panel and Shop Wiring

Wiring for factory assembled control panels or assemblies of electrical components on the transformer shall be of a cross-linked-thermosetting-polyethylene insulated type conforming to the requirements of NEMA WC 70 (paragraph 4.1.13). The insulation shall be moisture and heat resistant, suitable for conductor temperatures not exceeding 90 degrees-C normal operation, and shall also pass the Type A vertical flame test requirements of NEMA WC 70 (paragraph 6.8). All wires shall be single conductor stranded coated annealed copper, insulated for not less than 600-volt service. Conductors shall be Class B or Class C stranding, except hinge wires shall be Class K stranding. Hinge wires shall be used between stationary panels and swing doors, and shall be formed in wire loops that will provide rotation around the longitudinal axis of the conductors. Type SIS wire may be used in the control panel, however, Type SIS wire shall not be used in conduit runs unless specifically approved for such uses. Conductor size shall be not less than No. 12 AWG, except for current transformer secondary leads, which shall not be less than No. 10 AWG. All connections to device terminal studs or blocks shall be made with pressure-indented terminals. The completed installation shall conform to all requirements of the NFPA 70.

2.17.2.3 Special Control and Signal Cable

The cable shall conform to the applicable requirements of NEMA WC 5. Parts, sections, paragraphs, tables specified hereinafter will refer to NEMA WC 5. Conductors shall be tinned copper with Class B or Class C stranding

conforming to Part 2. Conductors shall be insulated for 600-volts with polyethylene insulation conforming to the requirements of Table 3-2 and paragraph 3.9. Overall shielding shall be provided by aluminum-Mylar tape to provide 100 percent coverage. A drain wire in intimate contact with the shield shall be provided. Overall shields shall be provided for multiple-shielded pair or triplet cables. A jacket shall also be provided over shielded pairs or triplets of multiple-grouped cables in accordance with paragraph 4.3.1 and Table 4-4 for equivalent diameter of single conductor cables. Individual conductors of shielded and jacketed twisted pairs and triplets and jackets over paired or tripled conductors shall be color coded in accordance with paragraph 5.5.2.1 and Table 5-1. Polyvinyl chlorine (PVC) insulation or jacketing will not be accepted.

2.17.3 Conduit Systems

All wiring from the transformer devices and accessories listed below shall be run in rigid galvanized conduit conforming to NEMA C80.1, zinc coated (galvanized) both inside and outside. Wiring shall be connected to terminal blocks in the cabinet, with the exception that short lengths of cables suitable for outdoor use will be permitted between individual device terminals and nearby connection boxes. All conduit runs installed by the Contractor shall be terminated at devices or connection boxes and at the terminal cabinet in standard pipe-threaded couplings or nipples integral with or welded to the device or cabinet. Similar pipe-threaded connections shall be provided on the terminal cabinet for attaching incoming conduit. Other conduit connections shall be made with cast metal boxes and outlet fittings having threaded outlets and gasketed covers. The conduit systems shall be electrically continuous and all threaded joints shall have the threads coated with an approved conductive joint compound. No running threads on conduit will be permitted. Fittings for rigid metal conduit shall conform to NEMA FB 1. Cast aluminum boxes with cast covers shall be used conforming to the requirements of UL 514B and UL 886. Short lengths of watertight flexible conduit may be used for connections to auxiliary devices, subject to approval. Flexible conduit shall conform to UL 1, shall have a hot dipped galvanized steel core, copper ground wire and a waterproof extruded PVC cover. Fittings for conduit shall be threaded and conform to NEMA FB 1, UL 467, and UL 514B, and shall be constructed to ensure positive grounding.

2.17.4 Terminal Blocks

2.17.4.1 General

Except for the diode and rail terminal blocks, terminal blocks for control signal and current transformer secondaries shall be removable and of binding, fillister or washer-head screw type, or stud type with contact and locking nuts. Each terminal shall be not less than No. 10 in size, having length and space for connecting at least two No. 12 AWG conductors to each terminal. Terminal blocks shall be provided to terminate all external cables and shall contain at least four spare terminals or 10 percent, whichever is greater. White or other light colored marking strips, shall be provided for circuit designation. Each connected terminal of each block shall have the circuit designation or wire number placed on the marking strip with permanent marking fluid. Two reversible or spare marking strips shall be furnished with each block.

(1) Control Signal Type. All terminal blocks for control wiring, shall be sliding link disconnect molded or fabricated type with barriers, rated not less than 600 volts with 30 ampere capacity.

(2) Current Transformer Secondaries Type. Short circuiting type terminal blocks shall be furnished for all current transformer secondary leads as shown in the contract drawings and shall have provisions for short-circuiting together all leads from each current transformer without opening any circuit. Short-circuiting the terminals of only one current transformer shall not short-circuit the terminals of any other current transformer.

(3) Diode Terminal Blocks. Diode terminal blocks shall be provided for annunciator connections as shown in the contract drawings. Diode terminal blocks shall be modular, rail mounted devices, rated not less than 600 Volts and 20 Amperes. Individual terminal block thickness shall not exceed 0.24 inch. The terminal connections shall be pressure type with length and space for connection of at least two No. 16 AWG stranded conductors on each end of the feed-through. The terminal contacts shall be designed to prevent the terminated wires from being loosened by vibration or by normal pulling forces. Each terminal block shall include a component plug that can be plugged into the top of the terminal block. The component plug shall contain a 1N4007 diode such that when the component plug is plugged into the terminal block, the diode connects the two terminals on the terminal block. Mounting rails and end covers shall be provided for the terminal block assemblies. White or other light colored marking strips, shall be provided for circuit designation. Each connected terminal of each block shall have the circuit designation or wire number placed on the marking strip with permanent marking fluid. Twenty percent reversible or spare marking strips shall be furnished. Diode terminal blocks shall be Entrelec or approved equal.

2.17.5 Lighting, Convenience Receptacle, and Cabinet Heater

One 120 V lamp with 750 lumens minimum output, complete with housing, wiring, and switch shall be provided in the control cabinet for illumination. If an incandescent lamp is provided, the lamp shall be rated 75W, be industrial grade, and the switch shall be 20 A, T rated. The lamp shall be placed or shielded so that direct light will be thrown on the control panel only. A 125 V, 3 wire, 20 A, GFCI type receptacle, shall be provided in the control cabinet. A 120 V thermostatically controlled electric space heater of adequate rating shall be provided in the cabinet to prevent condensation when the outside temperature is as low as -20 degrees Celsius.

2.17.6 Auxiliary and Interposing Relays

Auxiliary and interposing relays, with the exception of time delay relays, shall be of the self-reset type and shall be provided with convertible contacts. They shall be provided where device contact ratings, which interface with external powerhouse equipment, do not meet the contract requirements of this paragraph. Relay coils and contacts shall be suitable for continuous operation in 125 Vdc or 120 Vac circuits, as required. Contacts shall have a 10 A continuous current rating. The single-contact inductive load interrupting capacity shall be not less than 1.0 A for 125 Vdc, or 6 A for 120 Vac. Relays used in 125 Vdc circuits shall be rated for

operation between 90 and 140 Vdc. Relay coils used in 125 Vdc circuits shall be designed to operate at 140 Vdc continuously. Relays shall meet the requirements of NEMA ICS 2, designation A 600.

2.17.7 Control and Instrument Switches

Control and instrument switches shall be of the rotary switchboard type with handles on the front and the operating mechanisms on the rear of the panels. Each switch shall be provided with ample contact stages including spare contacts where indicated to perform the functions of the control system. Contacts shall be self-aligning and shall operate with a wiping action. A positive means of maintaining high pressure on closed contacts shall be provided. Compression springs or pivoted joints shall not be depended upon to carry current. The covers or plates on the switches shall be readily removable for inspection of contacts. The switches shall be suitable for operation on 600-volt ac or 250-volt dc circuits, shall be capable of satisfactorily withstanding a life test of at least 10,000 operations at rated current, and shall be capable of continuously carrying 20 amperes without exceeding a temperature rise of more than 30 degrees C above ambient. The single-breaking inductive load interrupting rating shall be not less than 1.5 A for 125 Vdc, or 10 A for 120 Vac. Each switch shall be provided with an escutcheon clearly marked to show each operating position. The switch identifications shall be engraved on the escutcheon plates and on separate nameplates.

2.18 JACKS AND TOOLS

The following equipment for assembling, disassembling, and moving each transformer shall be furnished by the Contractor. The equipment shall remain at the Libby Dam powerhouse, and shall remain the property of the Government after completion of the work:

2.18.1 Jacks

Not less than four heavy duty hydraulic jacks suitable and adequate to safely lift the complete transformer, including radiators, filled with oil shall be provided. Each jack shall be equipped with a pressure gage and a pressure relief device.

2.18.2 Tools

A complete set of any special tools, wrenches, or equipment that may be necessary or convenient for assembling, disassembling and moving the transformer, and also any other accessories and/or appliances which are necessary for satisfactory operation or servicing thereof and are not specified herein, shall be provided.

2.19 SPARE PARTS

All spare parts shall be duplicates of the original parts furnished and interchangeable therewith. The following spare parts for the transformer shall be furnished:

(1) Two complete sets of all gaskets needed to seal all openings into the transformer tank at the cover, manholes, handholes, openings for accessory devices, openings for high, low, and neutral bushings, and pipe connections for radiators. One complete gasket set to be used for

the cover when untanking is performed, which will ensure that no weldment material will enter the transformer tank during the welding process.

(2) Four fans, complete with motors.

(3) Six complete refills for the oil expansion tank desiccant breathers.

2.20 NAMEPLATES

2.20.1 Transformer Nameplate

the transformer shall be provided with a cast bronze or stainless steel nameplate conforming to the requirements of IEEE C57.12.00, Table 10. In addition to the requirements of Table 10, the nameplate shall also include the following: date of manufacture, manufacturing plant location and address, Government contract number, the amount of pressure and vacuum the tank will withstand, and the transformer X/R ratio. The nameplate or an adjacent nameplate shall also include the following information for each current transformer furnished: the accuracy class, the primary and all secondary ampere ratings, and identification of the terminals to which the current rating applies. The following transformer identification shall be provided:

(1) The core and coil assembly structural framework shall be stamped with the serial number of the transformer.

(2) The transformer serial number shall be stamped into the tank immediately adjacent to the transformer nameplate with characters approximately 1/2 inch high.

(3) The location of the centers of gravity (c.g.) of the completely assembled transformer filled with oil, and the heaviest piece for shipment without oil, shall be permanently marked on two adjacent sides of the transformer tank and shall be appropriately identified "c.g. complete" and "c.g. for shipment".

(4) A diagram plate shall be provided to show the various sling and lift positions required for proper lifting of the core and coil assembly and for lifting or jacking the completely assembled transformer, with and without oil. It shall also indicate the untanking height and whether the transformer may be lifted when filled with oil.

2.20.2 Device Nameplates

Each item of equipment mounted in the transformer control cabinet shall be provided with an engraved nameplate. Nameplates shall be made of anodized aluminum approximately 1/8 inch thick or stainless steel, engraved and provided with black lettering. Each nameplate shall be fastened to the panels in proper locations, with either corrosion-resistant black finished round head screws, or on screw posts with corrosion-resistant black finished nuts.

PART 3 EXECUTION

3.1 ELECTRIC WELDING

3.1.1 Preparation for Welding

Members to be joined by welding shall be cut accurately to size and, where required, shall be rolled or pressed to the proper curvature and dimensions. The edges of the members shall be sheared, flame cut, or machined to suit the required type of welding and to allow thorough penetration. The cut surface shall expose sound metal free from laminations, surface defects caused by shearing or flame cutting operations, or other injurious defects. The surfaces of plates to be welded shall be free from rust, grease, and other foreign matter for a distance of at least 1/2-inch back from the edge of the weld.

3.1.2 Welding

All welding shall be performed by the electric arc method, by a process which will exclude the atmosphere from the molten metal and, where practicable, under procedure control using automatic machines. After being deposited, welds shall be cleaned of slag by shot blasting, unless otherwise approved, and shall show uniform sections, smoothness of weld metal, feather edges without overlap, and freedom from porosity and clinkers. Visual inspection at the edges and ends of welds shall indicate good fusion with the base metal. Particular care shall be taken in aligning and separating the edges of members to be joined by butt-welding so that complete penetration and fusion at the bottom of the joint will be assured. All pinholes, cracks, and other defects shall be repaired by chipping or grinding to sound metal, and rewelding. Where fillet welds are used, the members shall fit closely and shall be held together during welding. The welding rods used for manual welding shall be of the heavily coated type and shall be suitable for the position in which the welding is performed.

3.1.3 Welding Process

The Contractor shall have established and recorded a specification of the welding process that he proposes to use and, if required, shall submit a copy of such process specification, together with certified copies of reports of results of tests made in accordance therewith. The qualification of the welding process shall be in accordance with the requirements of AWS B2.1, and the minimum requirements of the tests shall be as stated in the appendix thereto.

3.2 FACTORY ASSEMBLY AND TESTS

3.2.1 General

The transformer shall be completely assembled and adjusted at the factory, and shall be subjected to the manufacturer's routine shop tests and also other tests as specified below. All parts shall be properly marked and identified for ease of assembly in the field. The Contracting Officer's Representative (COR) shall witness all tests required herein unless waived in writing, and no equipment shall be shipped until it has been released for shipment by the COR. No power transformer factory acceptance tests shall be performed until all submittals required up to the point of factory testing have been reviewed by the Government and given an Action Code 'A' or 'B'

approval. The Government shall be provided notification of the date of factory tests sufficiently in advance of the scheduled test date so that arrangements can be made for the COR to be present at the tests. The factory tests, including test equipment, test methods, measurements, and computations, shall be in accordance with the applicable requirements of IEEE C57.12.00, IEEE C57.12.80 and IEEE C57.12.90, unless otherwise specified, and the Factory Test Procedures shall be submitted for approval. All routine tests required by the referenced standards shall be made and reported whether specifically required by these specifications or not. Except where otherwise specified in the Standards, all measurements and tests involving alternating voltage shall be made with 60 Hz sine wave voltage. The Contractor shall furnish five certified copies of all Transformer Factory Acceptance Test Reports, including oscillograms and complete data on all tests. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The cost of performing all tests shall be borne by the Contractor and shall be included in the unit price for Item 3002 of the Bid Schedule.

3.2.2 Power Transformer Tests

All routine and design power transformer tests as indicated in IEEE C57.12.00, Table 19 shall be performed. In addition to these tests, the following tests and specific test requirements shall be performed:

3.2.2.1 Transformer Tanks and Radiators

The transformer tank and radiators shall be tested for leaks when filled with oil. The test pressure shall be less than that of the pressure relief setting of the pressure relief device, subject to approval, and shall be maintained for at least 4 hours. The test may be constructed simultaneously with the radiators attached to the tank, or each bank of radiators may be tested individually. When separate tank compartments are furnished for parts of the tap changer, each such compartment shall be subjected to both internal and external pressures of 10 psi for 30 minutes without leaking. The tank wall surfaces shall be checked for hot spots during the heat run tests. The tank wall hot-spot temperature rise shall not exceed 70 degrees-C while operating at 100 percent of its rating.

3.2.2.2 Impulse Tests

Oscillograms shall be taken of surge voltages during all impulse tests and of neutral current during the full-wave impulse tests. The impulse tests shall be made by direct application without 60-Hz excitation. Lightning impulse tests shall be performed on neutral terminals. The oscillograph shall be adjusted to give the same deflection on reduced-voltage and full-voltage impulse waves to facilitate comparison of the oscillograms. Comparisons shall also be made of the consecutive chopped-wave impulse oscillograms. Oscillographic comparison traces shall be printed, and provided in the certified test report. Any deviation in voltage or neutral current wave shape between reduced-voltage and full-voltage full-wave tests, shall be explained to the satisfaction of the COR or it will be considered cause for rejection of the transformer.

3.2.2.3 Induced Voltage Test With Partial Discharge Measurements

(1) During the 7,200-cycle test, the corona level, excluding background noise, shall not exceed 250 microvolts at the full test

voltage. Any variation in corona intensity before and after application of full 7,200-cycle test voltage shall be explained to the satisfaction of the Contracting Officer.

(2) It is recognized that sizable corona readings during tests are likely to occur from causes external to the transformer itself, such as corona in the high-voltage test circuit, noise from shop equipment, other tests, and radiation or induction pickup through air between the measuring circuit and the high-voltage test equipment. All reasonable precautions shall be taken to minimize such external interference, and the Contractor shall demonstrate that this corona is in no event internal to the transformer by sample tests showing the difference in characteristics between corona under oil and corona in air. It is entirely permissible to utilize special shielding or over insulated bushings to minimize the effects of bushing corona.

(3) During the one-hour test, the corona level shall not exceed 100 microvolts at the full test voltage.

(4) All records, meter readings, and data taken during the above described tests, together with a diagram of the circuit employed, shall be incorporated in the certified test report.

3.2.2.4 No-Load Tap Changer Test

The completely assembled no-load tap changer shall be subjected to ten complete tap changing cycles (end-tap to end-tap) to demonstrate that all linkages, contacts, and indicating mechanisms are properly assembled and aligned and free from excessive slack, deformation, or fragility.

3.2.2.5 Audible Sound Level Test

The transformer's sound level shall not exceed the value specified in paragraph 2.1.3, "Ratings and Electrical Characteristics". If the sound level exceeds the specified limit, the Contractor shall modify the transformer as required to reduce the sound level to the specified level, and the sound level test repeated. The abatement technique used to reduce the tested sound level to the guaranteed sound level shall be subject to approval of the Contracting Officer.

3.2.2.6 Leakage Reactance Measurement Test

The transformer shall have leakage reactance measurement tests performed between the high-voltage windings and the low-voltage windings, for use as baseline data for future testing. Voltage, current, and phase angle measurements shall be recorded, and the leakage reactance calculated. The proposed leakage reactance test equipment, setup, and test levels shall be included in the factory test procedures submittal.

3.2.2.7 Sweep Frequency Response Analysis Test

The transformer shall have a Sweep Frequency Response Analysis (SFRA) test performed, for use as baseline data for future testing. The equipment to be used for performance of this test shall be Doble Model M5100B, or approved equal. The proposed SFRA test equipment, setup, and test procedure shall be included in the factory test procedures submittal.

(1) Test Equipment. The excitation source for the SFRA test shall generate a sinusoidal waveform at a constant magnitude over a 20 Hz to 2 MHz frequency range, to allow for consistent measurement of the transfer function across the frequency range. Successive measurements shall be logarithmically spaced at a maximum of 5 percent of the previous measurement, to assure a clear definition of the waveform shape across the frequency range. The test set shall be capable of measuring from 0 to -80 dB, or lower, over the frequency range. The test system should provide a 50 Ohm characteristic impedance for consistency between different test systems. Test leads shall consist of coaxial cables of the same length.

(2) Test Connections. All windings shall be tested as indicated below, for each tap position (where H windings are being tested).

WYE-DELTA-DELTA 3-PHASE TRANSFORMER					
TEST 1	**TEST 2**	**TEST 3**	**TEST 4**	**TEST 5**	**TEST 6**
H1-H0	H2-H0	H3-H0	X1-X3	X2-X1	X3-X2
TEST 7	**TEST 8**	**TEST 9**	***TEST 10**	***TEST 11**	***TEST 12**
Y1-Y3	Y2-Y1	Y3-Y2	H1-H3	H2-H1	H3-H2
****TEST 13**	****TEST 14**	****TEST 15**	**TEST 16**	**TEST 17**	**TEST 18**
H1-H3	H2-H1	H3-H2	H1-X1	H2-X2	H3-X3
TEST 19	**TEST 20**	**TEST 21**	**TEST 22**	**TEST 23**	**TEST 24**
H1-Y1	H2-Y2	H3-Y3	X1-Y1	X2-Y2	X3-Y3

* Indicates short circuit tests: X1, X2, and X3 are shorted together.
** Indicates short circuit tests: Y1, Y2, and Y3 are shorted together.

(3) Data Format. The SFRA software data files shall be submitted along with the transformer test report. The test report data shall be viewable in Microsoft Excel format, and shall include:

(a) Frequency

(b) Magnitude

(c) Phase

(d) Tap positions for each test

(e) Previous tap position for neutral tap test

(f) Relevant nameplate data

(g) Test set information (make, model, calibration)

(4) Data Interpretation. SFRA testing produces traces which provides information related to the physical geometry of the test specimen. The factory SFRA tests performed on the transformer creates baseline data for use in future testing, and helps in recognizing obvious manufacturing defects, such as open circuits, short circuits and winding deformations.

3.2.2.8 Combustible Gas-In-Oil Analysis

Samples of the transformer insulating oil shall be taken, and combustible gas-in-oil analysis tests shall be performed as follows. Identity of samples and results of analyses shall be included in the certified test report.

(1) After oil-filling of the transformer, and prior to the performance of any transformer factory acceptance tests.

(2) Prior to the performance of temperature rise testing.

(3) After completion of all transformer factory acceptance tests.

3.2.3 Bushing Tests

Bushing tests shall be performed in accordance with IEEE C57.19.00 and IEEE C57.19.01 (2000) for high-voltage and high-voltage neutral bushings, and IEEE C57.19.01 (1991) for low-voltage bushings. Any bushing that fails to pass all tests to which it is subjected will be rejected. The Contractor shall submit, without additional cost to the Government, five certified copies of all Bushing Test Reports.

3.2.3.1 Bushing Design Tests

Bushing design tests shall be performed on one bushing of each type provided in accordance with IEEE C57.19.00 (paragraph 7.2), unless these tests have previously been performed on bushings of the same manufacture, design, type, and rating as those being provided within 5 years of the date of this contract, in which case the requirements for repeating these design tests will be waived and certified copies of the test results of satisfactory tests of this kind shall be furnished to the Contracting Officer. If any bushing given the impulse tests fails to pass any of the tests, then all bushings of the same type and rating shall be subjected to the impulse tests at no additional cost to the Government.

3.2.3.2 Bushing Withstand Test Voltages

The bushings shall be tested per the applicable requirements of IEEE C57.19.01, Table 1.

3.2.3.3 Bushing Routine Tests

Each new bushing provided shall be subjected to the routine tests in accordance with IEEE C57.19.00 (paragraph 7.4).

3.2.3.4 Bushing Current Transformer Tests

Each bushing current transformer shall be given routine tests in accordance with IEEE C57.13 (paragraph 4.7.2), including a low frequency dielectric test of the secondary of 2,500 V to ground for one minute. Induced potential tests shall be made at the full required voltage and for the full required duration corresponding to the test source frequency. Each current transformer shall be checked for proper nameplate and polarity markings, and after installation on the power transformer it shall be given a polarity check and ammeter ratio check to ensure correct installation. The

Contractor shall furnish, without additional cost to the Government, five certified copies of the following data:

(1) Typical excitation curves for each turn ratio.

(2) Typical ratio correction factor curves for each turn ratio.

(3) The resistance of the secondary winding at 75 degrees-C, including the approximate resistance of the secondary leads from the transformers to the terminal blocks in the terminal cabinet.

3.2.4 Surge Arrester Tests

The surge arresters shall be subject to inspection at the factory by the Government, and shall be given the manufacturer's routine test and factory conformance tests as indicated below. Tests on the outdoor station metal oxide type surge arresters shall be based on the equivalent voltage rating specified in paragraph 2.13, "Surge Arresters".

(1) Design Tests. There shall have been performed the following design tests on surge arresters identical in design to the arresters furnished under these specifications. The tests shall clearly demonstrate that the arresters furnished will have characteristics that meet, and will conform to, all requirements of these specifications. Two certified copies of these design test data shall be furnished if the arresters are different from the manufacturer's type. The following design tests shall previously have been made in accordance with Section 8 of IEEE C62.11:

(a) Arrester insulation withstand tests (paragraph 8.1).

(b) Equivalent Front-of-Wave Protection Level (paragraph 8.4.2). The arrester blocks shall be subjected to 10 kA impulse currents of a time to crest so as to produce an arrester voltage rising to crest in 0.5 microseconds.

(c) Transmission-line discharge test (paragraph 8.6.2.1).

(d) Discharge-voltage characteristics tests (paragraph 8.3).

(e) Duty-cycle tests (paragraph 8.7).

(f) Pressure-relief tests (paragraph 8.9).

(g) Contamination tests (paragraph 8.12).

(2) Conformance Tests. The surge arresters shall be subjected to conformance tests for outdoor station metal-oxide type arresters in accordance with IEEE C62.11 as follows:

(a) Discharge voltage test (paragraph 9.3).

(b) Internal ionization voltage test (paragraph 9.4). This test shall be performed as a conformance test. Each complete arrester, when energized at a test voltage of 90 percent of the equivalent arrester voltage rating specified in paragraph 2.13 shall, exhibit not more than 50 V.

(3) Failure to Meet Tests or Specified Characteristics. If any arrester unit fails under conformance tests it will be rejected, and a new arrester shall be provided and tested. The cost of performing the conformance tests and furnishing test reports shall be included in the bid price for the surge arrester.

3.3 FACTORY CLEANING AND PAINTING

3.3.1 General

All interiors and exteriors of the tank, enclosures, cabinets, and other metal parts which are not galvanized or of corrosion resistant material and are exposed to oil or weather shall be thoroughly cleaned and painted. Cleaning shall be by degreasing and abrasive blasting or other means to remove all grease, scale, corrosion, and foreign substances.

3.3.2 Interior Surfaces

All interior surfaces of the main transformer tank shall be given at least one priming coat and one finish coat of oil-resistant paint or enamel. The interior color shall be white.

3.3.3 Exterior Surfaces

All exterior surfaces shall be given a primer and two finish coats of pigment paint in the factory. The paint shall be epoxy ANSI No. 70 gray color, applied over a properly prepared, primed surface. The dry film thickness of the primer shall be a minimum of 1.5 mils, and that of the epoxy a minimum of 3.5 mils. One gallon of paint, from the same batch used on the transformer, shall be supplied with the transformer for touching up. With prior approval of the Contracting Officer, other comparable paint types may be used.

3.3.4 Machined Surfaces

All machine finished or corrosion-resistant surfaces shall be remain unpainted, and be thoroughly cleaned, coated with a suitable, easily removed, corrosion resistant compound, and wrapped or otherwise protected from damage in shipment.

3.4 TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

The transformer equipment, accessories, and spare parts shall be prepared for shipment f.o.b. Libby Dam, inspected, moved into its final operating storage location, re-assembled and tested per the requirements of SECTION 01600.

-- End of Section --

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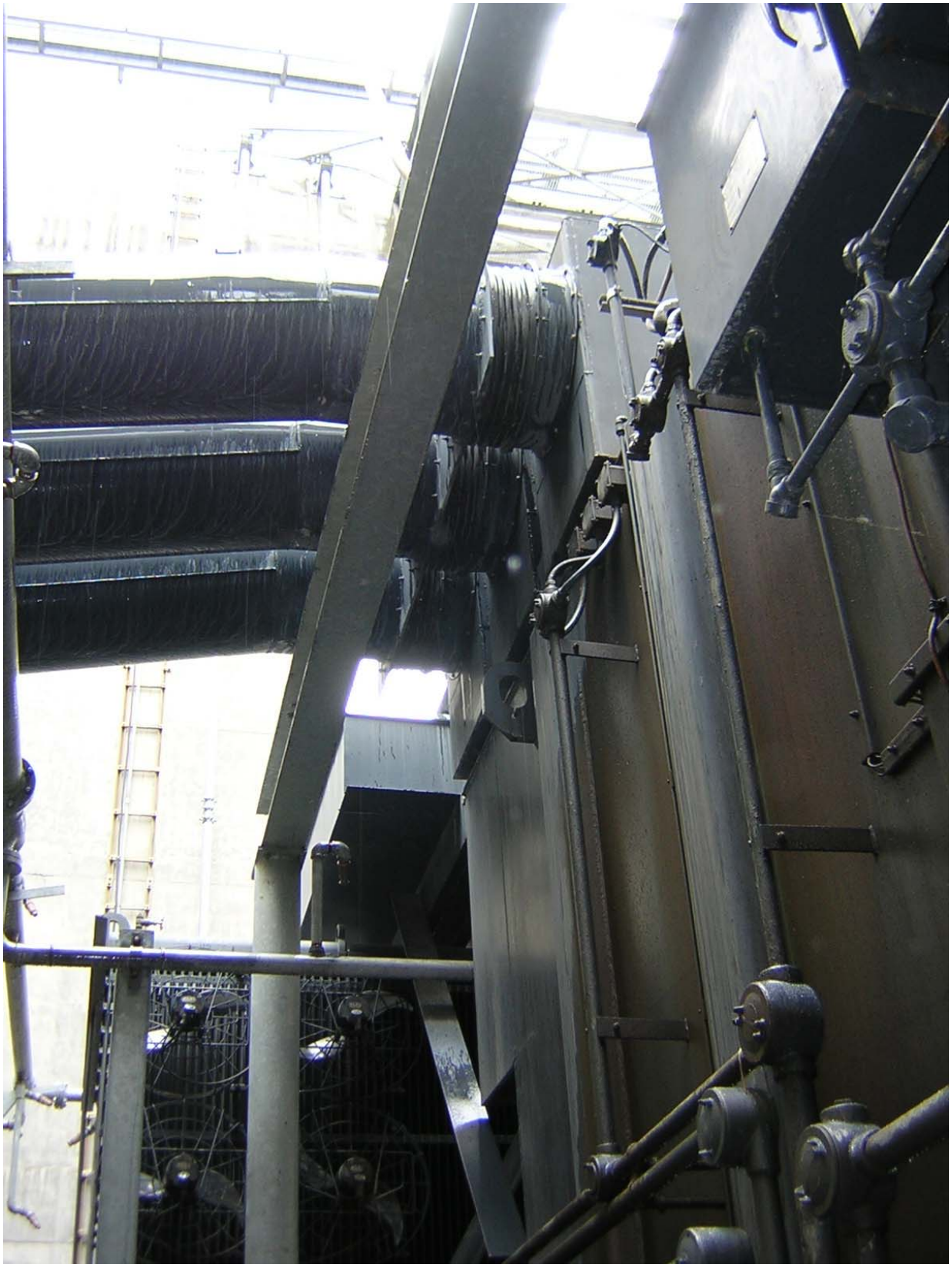
Entrance to Libby Dam Powerplant
(Transformer deck to left)

Libby Dam El. 2148.0 Transformer Deck

Existing Westinghouse 230 kV Transformer



Typical 13.8kV Isolated-Phase Bus Connections to Transformer

Typical Existing Transformer Concrete Mounting Pad

Spare Transformer Permanent Storage Location

ATTACHMENT J3-D

STATION STANDING ORDER No. 1
LIBBY DAM PROJECT

HAZARDOUS ENERGY CONTROL PLAN
(Safe Clearance Procedures)

CENPS-OP-LI

Finalized: July 10, 1996
Revised: January 7, 2004

1.0 **PURPOSE** This Station Standing Order prescribes programs and procedures to safeguard personnel whose research, testing, construction, operating, or maintenance duties require them to work on or in proximity to equipment in which the unexpected energizing, start up, or release of stored energy or contact with energized or moving equipment could cause personal injury or property damage. These programs and procedures are mandated by law and are necessary to prevent personal injury and damage to resources.

2.0 **AUTHORITY** The preparation and issue of this Hazardous Energy Control Plan is directed by ER 385-1-31, 28 May 1993, "SAFETY AND OCCUPATIONAL HEALTH, THE CONTROL OF HAZARDOUS ENERGY (Safe Clearance)," Department of the Army, U.S. Army Corps of Engineers.

3.0 **APPLICABILITY** The Corps of Engineers' ER 385-1-31 is applicable to all HQUSACE/OCE elements, major subordinate commands, districts, laboratories, and field operating activities (FOA). This policy specifically applies to the dams, spillways, powerhouses, transformer areas, and all of the equipment under the respective operational control of the Electrical Crew Foreman and Mechanical Crew Foreman at the Libby Dam Project. These procedures utilizing lockout will also be used in areas under the control of the Natural Resource Management Staff.

4.0 **REFERENCES.**

4.1 29 CFR 1910.269. "Control of Hazardous Energy, Lockout/Tagout."

4.2 AR 690-700, Chapter 751.

4.3 EM 385-1-1 "US Army Corps of Engineers Safety and Health Requirements Manual."

4.4 ANSI C2, National Electrical Safety Code.

4.5 ER 385-1-31 "Safety and Occupational Health, The Control of Hazardous Energy (Safe Clearance)."

5.0 **POLICY.**

5.1 Before personnel perform any servicing or maintenance on a system where unexpected energizing, start up, or release of stored energy could occur or where contact with energized or moving equipment could occur and cause personnel injury, property damage, or loss of content, protection, capacity, or energy, the equipment shall be covered by a **Safe Clearance** and its energy sources controlled in accordance with the procedures of ER 385-1-31 and of this **Station Standing Order**. Personnel and resources shall not be considered protected until **Hazardous Energy Control Procedures** have been implemented.

5.2 All **Shift Operators** and **Employees** authorized to take clearances and/or work within the boundaries of another's clearance in any area within and around the project (including the dam, powerhouse, spillway, warehouse or intake structure and associated equipment, and any other project areas) must be thoroughly familiar with this **Station Standing Order**, and must be certified as having received all appropriate training as required by ER 385-1-31.

5.3 All **Other Employees** will be trained to recognize the restrictions imposed upon all employees by the Energy Control Plan.

5.4 General policy on clearances for the **Libby Dam Project** shall be to use locks on all equipment, which is under clearance unless the equipment design prevents it, or unless other methods are used to provide protection equal to that which would be provided by a lock.

5.5 Standard **"canned"** clearances will be used whenever possible; however, this does not relieve the **Clearance Requester** or the **Shift Operator** of the responsibility to determine that the clearance is safe for the work to be accomplished.

6.0 **DEFINITIONS.**

6.1 A **Safe Clearance** is a definite operating arrangement whereby a **Clearance Requester**, acting individually or as a representative for a crew, may have designated equipment removed from or held out of service for maintenance or repair purposes under an approved lockout/tagout process which insures the safety of the workers involved. The approved process provides protection from hazardous energy sources, which could endanger workers or equipment.

6.2 **SWITCHING PERMIT**: UPON RECEIVING PERMISSION FROM THE **SHIFT OPERATOR,** a **Requester** can isolate certain designated equipment and hang a personal lock and a **"OUT OF SERVICE/DO NOT OPERATE"** tag. This can be used within the limitations defined in SECTION 19.0 and 20.0, on the operating controls while making routine inspections, testing or performing minor maintenance. If multiple isolation points are required, a clearance shall be used. (Refer to Section 19.1.9 for Switching Permit work safety requirements.)

6.3 Additional definitions are contained in Appendix A to this Station Standing Order.

7.0 **RESPONSIBLE OFFICIALS - RESPONSIBILITIES and AUTHORITIES:**
(The Project Manager & the appropriate Crew Foreman are the **Responsible Officials** and shall establish the Safe Clearance Procedures to be used for the Project.) **RESPONSIBLE OFFICIAL shall:**

7.1 Develop, publish, and implement local Hazardous Energy Control Procedures.

7.2 Prepare a list of **Individuals** authorized to accept clearances. (The list of those employees specifically authorized to receive Safe Clearances shall be maintained in Appendix B, and this list shall be kept current at all times.)

7.3 Designate all **Shift Operators** as Issuing Employees and clearly define their responsibilities.

7.4 Provide for annual training on Hazardous Energy Control Procedures.

7.5 Prepare a list of equipment that may be removed and returned to service without issuing a Safe Clearance. (Refer to Appendix E, Switching Permit Provisions)

7.6 Arrange all long-term outages and schedules through the NPD Reservoir Control Center and/or BPA Scheduling.

7.7 Assure that appropriate disciplinary action is taken subsequent to violations of Hazardous Energy Control Procedures.

8.0 **ISSUING EMPLOYEE (SHIFT OPERATOR) RESPONSIBILITIES and AUTHORITIES:**
(The Power Plant Shift Operator on duty has authority over all project equipment that is not under clearance.) In a case where there is more than one qualified operator on shift, either operator may assume this role; but for purposes of continuity and safety, it shall normally be for the entire shift.

8.1 The use of **Safe Clearances or Out Of Service/Do Not Operate Tags, which** would affect project operations, shall be authorized by the **Shift Operator**. The **Shift Operator** may delegate the clerical work and labor of the **Safe Clearance** process. Delegation, however, shall not relieve him/her of the responsibility to be fully informed at all times of the current status of the equipment, and for the safety implied by the conditions established by the **Safe Clearance** or personal **Lockout/Tagout**.

8.2 Only the **Shift Operator** may issue or accept the release of a Safe Clearance. **This authority shall remain with the operator in charge of the shift and shall not be redelegated to any other individual.**

8.3 The **Shift Operator** shall schedule necessary short-term interruptions of service.

8.4 When applicable the **Shift Operator** shall coordinate with BPA and any other appropriate power agencies to ensure the isolation of equipment. (Refer to Section 8.14)

8.5 The **Shift Operator** shall complete the Safe Clearance Request Form, ENG Form 1927-R, for safe clearing and lockout/tagout of equipment. (Normally the clearance requester will initiate this form.)

8.6 The **Shift Operator** shall prepare Safe Clearance Tags (ENG Form 1925) for each Safe Clearance requested. (This duty may be delegated to a Lap Operator.)

8.7 The **Shift Operator** shall clear and lock or tag equipment as appropriate to prevent inadvertent re-energization of equipment. Tagout shall only be used where other methods of ensuring worker safety are also used, such as removing a breaker or physically isolating the equipment in some other way. (These duties may always be delegated to a lap operator, if one is available, and except for main unit and overlapping clearances, may be delegated to a qualified craftsperson.)

8.8 Once a **Safe Clearance Requester** has begun a walk-through of the cleared equipment, the **Shift Operator** shall not allow any change to the status of the tagged equipment unless the clearance requester formally requests it.

8.9 All **Safe Clearances** shall be recorded in the Control Room Daily Log. Log entries shall include the clearance number, time of issue and time of release.

8.10 The **Clearance Requester** shall keep the **Shift Operator** informed of work progress on cleared equipment and log all significant changes in equipment status.

8.11 The **Shift Operator** will log the location of temporary grounds or blocking devices on the Safe Clearance Request Form 1927-R and issue the appropriate clearance tags, which must be attached directly to the personal grounds or blocking devices. (Refer to Sec. 13.1.3)

8.12 The **Shift Operator** will issue, release, and record in the daily log all **SWITCHING PERMITS**, including at a minimum the purpose for issue and the person issued to and the times issued and released.

8.13 The **Shift Operator** is responsible for overseeing the proper transfer of a clearance from one **Employee** to another. (Ref. 16.0)

8.14 In addition to the duties and responsibilities described in the project Hazardous Energy Control Plan and ER 385-1-31, the Issuing Individual (normally the Shift Operator will receive Safe Clearances issued to the position for the following conditions:

1. Line terminal Clearances on tie lines and supply lines to and from outside utilities or the power-marketing agency (BPA) to establish safe working conditions within areas of high voltage equipment energized by these authorities.

2. To hold defective equipment out of service, or to prevent operation of malfunctioning equipment which might be damaged if operated.

3. In cases where emergency repair work is needed in order to restore critical equipment to service and no Authorized Individuals are available to take Clearances.

9.0 **CLEARANCE REQUESTER Responsibilities and Authorities:**
(The **Authorized Employee** is the safe clearance holder. Other authorized Individuals are listed in Appendix B.) **The EMPLOYEE signing for the clearance shall:**

9.1 Have full authority over the facility or equipment, which has been cleared out, within the limits of the clearance from the time he/she accepts the Safe Clearance, until he/she releases the Safe Clearance.

9.2 Ensure correct positioning (energized/de-energized) of **ALL** energy isolating devices; ensure that all appropriate locks and auxiliary hold tags are properly placed and that he/she personally signs initials, date and time to tags prior to signing for the clearance.

9.3 Place protective/temporary grounds and/or blocking devices as necessary to assure the safety of personnel and/or equipment. Notify the **Shift Operator** of all grounds or blocking devices. (Refer to Section 8.11)

9.4 Personally sign the Safe Clearance Request Form upon acceptance as a documented agreement with the **Shift Operator.**

9.5 Ensure that **work is NOT allowed** on devices used to isolate equipment and define Safe Clearance outer perimeters.

9.6 Release Safe Clearances after completion of work and testing by signing off on the Safe Clearance Request Form 1927-R.

9.7 Transfer Safe Clearances to other **Authorized Employees** as may be required.

9.8 When authorizing others to work within the boundaries of their clearance be responsible for ensuring those **employees** sign in on and date the **sign-in sheet**. When individually assigned work is completed by those whose names appear on the **sign-in sheet,** the clearance holder is responsible for having those **Affected Personnel** sign off the **sign-in sheet**.

IN THE EVENT an **Employee** signed up on the clearance **Sign-in Sheet** or **Request for Reconfiguration** or **Temporary Tag Lift**, is not on the project, and cannot be reached by phone, the clearance holder may, at his discretion, initial that **Employee** off by signing his own name, date and time, in the space next to the employee's signature; **PROVIDING** the employee's absence can be verified with his supervisor and direct knowledge of that employee's last work assignment is known.

NOTE: Prior to signing on and once **Employees** sign off the **sign-in sheet**, those **Employees will not** perform any further work on the equipment within the boundaries of the clearance.

9.9 **Safe Clearance Holders** who allow other individuals to work under their Safe Clearances will assume **full responsibility** for those individuals' safety. The **Safe Clearance Holder** shall keep all individuals who work under the Safe Clearance informed of equipment status. Personnel working under a Safe Clearance shall keep the Safe Clearance Holder informed of their status and notify him/her when their work is completed.

9.10 Keep the **Shift Operator** informed of conditions and progress of the work. Test operating shall require prior coordination with the **Shift Operator** and other Safe Clearance Holders if overlapping Safe Clearances are involved. The Safe Clearance Holder who requests a reconfiguration or temporary lift is **responsible for the safety of personnel and/or equipment involved** during the test or

requested operation of cleared equipment. The clearance holder is responsible for notifying those working under his/her clearance of any changes to be made to the clearance. The form, "**Request for Reconfiguration or Temporary Tag Lift of Equipment Under Clearance**", must be used and all individuals who have signed in on the "**Sign-in Sheet**" must sign the reconfiguration/temporary lift form acknowledging they are aware and completely understand all changes to be made and what effect it will have on their work assignments.

10.0 **DESIGNATED OPERATOR/EMPLOYEE - THOSE DESIGNATED BY THE SHIFT OPERATOR TO PERFORM CERTAIN CLEARANCE PROCEDURES RESPONSIBILITIES: (This may be the lap operator, or a qualified craftsperson in certain circumstances.) This person may be delegated by the Shift Operator from the list of QUALIFIED EMPLOYEES, with the restrictions as defined in Appendix B**

The DESIGNATED LAP OPERATOR or AUTHORIZED EMPLOYEE shall:

10.1 Act as a representative of the **SHIFT OPERATOR** in situations where the equipment to be cleared out is remote from the powerhouse or when it is not possible for the **Shift Operator** to personally perform the operations required for lockout or tagout. (Refer to Sec. 8.7)

10.2 Perform the switching, operating, valving and placing of locks and/or Safe Clearance Tags to isolate all project equipment to be worked on. The **Designated Employee** shall also assure that all requirements for the use of tags (including those for strength, durability, and positioning), as described in ER 385-1-31, are met.

10.3 Notify the **Shift Operator** when all switching is completed for the Safe Clearance and all tags and/or locks have been placed.

10.4 Double check the accuracy of Safe Clearances and sequence of tagging.

10.5 Keep the **Shift Operator** informed as to the status of the Safe Clearance being placed, report any discrepancies in the process(es) or equipment being cleared, and/or any malfunction of the equipment being cleared.

10.6 Immediately stop the Safe Clearance process and confer with the **Shift Operator** when there are any questions or doubts concerning the adequacy of the Safe Clearance being placed or when conditions are found that are different than expected.

10.7 Place appropriate warning signs and barriers.

10.8 Perform corresponding steps for clearance removal.

11.0 **EMPLOYEE AUTHORIZED TO WORK WITHIN THE BOUNDARIES OF ANOTHER EMPLOYEES CLEARANCE RESPONSIBILITIES and AUTHORITIES: (Individuals or crews working under the safe clearance.)**

11.1 Must sign in on the **Sign-in Sheet** before performing any work under the safe clearance.

11.2 Must refuse to perform any work they consider unsafe, while working under a Safe Clearance and notify the **Clearance Holder** of their action.

11.3 Must satisfy themselves that the equipment they are to work on is de-energized or in a safe condition, and the Safe Clearance has been issued prior to signing the sign-in sheet. This may include the use of voltmeters, pressure gauges, or other testing devices or methods. *See Section 12.3 on Group Clearances.

12.0 **REQUESTS FOR SAFE CLEARANCE**

12.1 **EMPLOYEE AUTHORIZED to accept clearance shall**:

12.1.1 Submit to the **Shift Operator** a request for a Safe Clearance sufficiently in advance to permit completion of all arrangements and operation prior to the proposed Safe Clearance time. In the case of scheduled outages, Safe Clearance Requests shall be submitted **at least twenty-four hours** in advance in writing.

12.1.2 When initiating Safe Clearance Request Form 1927-R, he/she shall enter the following information:

(1) Equipment to be cleared.
(2) Work to be performed.
(3) Description or nomenclature of energy control devices to be locked or tagged.
(4) Location of personal grounds, barriers or blocking devices.
(5) Estimated time required to complete work and return to service.
(6) Name of the person to whom the clearance will be issued.

(7) Date and time the clearance is required.

NOTE: The **Clearance Requester** and the **Shift Operator shall ensure a complete understanding of the extent and boundaries of the Safe Clearance**. The **Shift Operator** must know the reason for the Safe Clearance and the extent of the work to be performed in order to judge the adequacy of the Safe Clearance. In this respect, cooperation and exchange of information between all concerned is **mandatory.** Both the **Shift Operator** and the **Clearance Requester** are mutually responsible for the adequacy of the entire clearance.

12.2 **SHIFT OPERATOR shall:**

12.2.1 Upon receipt of a Safe Clearance Request, determine if the proposed request covers the type, magnitude, and hazards of the energy to be isolated and assure that the scope of the proposed Safe Clearance is adequate for the work to be performed.

12.2.2 Communicate with the **Clearance Requester to be certain that both of them understand** the type, magnitude, and hazards of the energy to be controlled and the limits of the controlled area.

12.2.3 Prepare Safe Clearance Tags in accordance with the Safe Clearance request. The **Shift Operator** retains the right to add additional Safe Clearance Tags to the Clearance as deemed necessary to assure the safety of personnel and/or equipment involved, and to configure the Safe Clearance Request to the proper sequence of the lockout/tagout procedure.

12.3 **GROUP CLEARANCES and OVERLAPPING CLEARANCES (Procedures involving more than one SAFE CLEARANCE HOLDER):**

12.3.1 If more than one **Clearance Requester** requires Safe Clearance protection on the same piece of equipment, each **Clearance Requester** shall submit their own Safe Clearance Request. The **Shift Operator** shall place the locks and/or tags on the energy isolating devices. In the areas where such Safe Clearance protections "overlap," or on clearances on main generating units the locks used on the clearance points shall be under the direct control of the **Shift Operator**. A separate tag for each clearance holder will be placed on each lock or each clearance point. The duties of performing switching and placing locks and/or tags may of course be delegated to a lap operator.

13.0 **ACCEPTING A SAFE CLEARANCE**

13.1 **EMPLOYEES AUTHORIZED TO REQUEST AND RECEIVE CLEARANCES shall:**

13.1.1 Be responsible to check the protection provided and ensure that it is adequate for the work to be performed.

13.1.2 Be responsible for clearing out and locking out or tagging out the equipment, when delegated by the **Shift Operator** as his relief. (Refer to Section 10.0, Designated Operator/Employee)

13.1.3 When applicable, be responsible for placement of temporary personal grounds and/or blocking devices, **and coordinating it with the Shift Operator**. All temporary grounds and/or blocking devices must be added to the clearance and a card issued, which will then be attached directly to the personal grounds and/or blocking devices.

13.1.4 Become fully responsible for the equipment covered by the Safe Clearance until Safe Clearance is released to the **Shift Operator.**

13.1.5 As certain that all switching has been performed, and all tags and/or locks have been properly placed and the tags initialed, dated and time entered before receiving the Safe Clearance by signing the Safe Clearance Request Sheet. The clearance can be temporarily accepted by telephone or radio (if on project) at the discretion of the **Shift Operator**.

13.1.6 Contact the **Shift Operator** to accept and release Safe Clearances **in person** by signing the Safe Clearance Request Form 1927-R.

13.1.7 Assume responsibility for informing all **Employees** working on the equipment of the status of the Safe Clearance before work starts, and have each **Employee working under the clearance** sign the **sign in sheet** indicating they are aware of the limits of the Clearance and the work to be performed. (See Group Clearances, section 12.3.)

13.2 **ISSUING EMPLOYEE (Senior Operator on Shift, or his appointee) shall:**

13.2.1 Ensure that all Safe Clearance Tags are properly completed and placed in the appropriate locations. In remote locations, this may be verified through the **DESIGNATED OPERATOR/EMPLOYEE**.

13.2.2 Assure that all records of the Safe Clearance are correct and complete, and that the Safe Clearance issue time is recorded in the station-operating log (Engineering Form 2198).

14.0 **TEMPORARY REMOVAL of clearance tags and/or locks. (Reconfiguration or temporary lift.)**

14.1 In situations where lockout and/or tagout devices must be temporarily or permanently removed from the energy isolating devices and the system energized for testing or repositioning purposes, the work shall be fully coordinated with the **Shift Operator.** The **Clearance Holder** requesting the change shall complete the **REQUEST FOR RECONFIGURATION OR TEMPORARY TAG LIFT OF EQUIPMENT UNDER CLEARANCE** (see appendix C). If more than one Safe Clearance Holder is involved or there is an **"overlapping"** of Clearance protection, all responsible parties shall coordinate the operation to ensure the safety of all employees. It is the Authorized Safe Clearance Holder's responsibility to ensure that all **Craftsmen** signed up on the Sign-in sheet are informed of the proposed testing or repositioning of the equipment and have signed the **RECONFIGURATION OR TEMPORARY TAG LIFT** sheet acknowledging they are aware and completely understand all clearance changes to be made and what affect it will have on their work assignments. (See Group Clearances, section 12.3.) The lockout/tagout devices must be removed before switching, valving, and operating of the equipment. When testing and/or repositioning of equipment is completed, the lockout/tagout devices shall be replaced, except on points requiring a permanent reconfiguration. These procedures shall be used by either the **Shift Operator or his designated relief** as appropriate. For purposes of testing or temporary repositioning only, the **Shift Operator** or the clearance holder may verify that all **affected employees** in remote areas are in the clear by means of radio or telephonic communications.

14.2 When cleared equipment is in a **"test"** or **"repositioning"** status, it shall be operated only under the direction of the Safe Clearance Holder(s) and with the permission of the **Shift Operator.**

14.3 When cleared equipment has been test operated or repositioned, pertinent information related to such operation shall be entered in the station logbook and Safe Clearance Sheet with appropriate times.

14.4 Isolation points which have been altered by **Temporary Lift procedure** for **"testing" or "repositioning"** shall be returned to Safe Clearance status before the end of the working shift, **unless the clearance status is permanently reconfigured as specified in section 14.1**.

15.0 **RELEASING OF SAFE CLEARANCES**

15.1 **Releases under "Normal Circumstances"**

15.1.1 Telephonic release of clearances by the clearance holder from **off project** will not be allowed. In any other situation where the clearance holder is not in a position to verify the status of **equipment** or the safe removal of personnel, he/she will not be allowed to release the clearance. **THE CLEARANCE HOLDER MUST PERSONALLY VERIFY THAT THE EQUIPMENT IS READY TO BE RETURNED TO SERVICE AND ALL PERSONNEL ARE SIGNED OUT ON THE SIGN IN SHEET AND MOVED TO A POSITION OF SAFETY.**

15.1.2 In areas remote from the powerhouse a clearance holder on project may release a clearance by radio or telephone when it is necessary to test or verify equipment operation, but only after those conditions required by 15.1.1 have been met. He/she must sign the release immediately after completing the work and not later than the end of the shift.

15.1.3 Safe Clearances must be **promptly** released by the Safe Clearance Holder upon completion of work under normal situations. (Refer to Section 15.2, Releasing of Safe Clearances under abnormal conditions).

15.1.4 Before a clearance holder may release his clearance, he is responsible for ensuring that the work area has been cleared of all nonessential items and that the equipment and its components are operationally intact.

15.1.5 After the clearance is released the **Shift Operator** shall check the equipment using established checklists where applicable and remove all tags and locks, and is responsible for placing the equipment back in service.

15.1.6 The **Shift Operator** is responsible for and must account for all Safe Clearance Cards removed from the equipment and must make proper entries in the Station Log noting the time and date the equipment returned to service.

15.2 **Releases under "Abnormal Circumstances"**

15.2.1 Release of a clearance by someone other than the Clearance Holder is an extremely serious undertaking and under no circumstances should it even be considered except in emergency conditions. In the event that it does become necessary the person affecting the release must make absolutely certain that everything necessary is completed to safely restore the equipment to service.

15.2.2 If, for reasons beyond control, it becomes impossible for the Authorized Safe Clearance Holder to effect the release of the Safe

Clearance, the **Shift Operator** shall contact the appropriate Crew Foreman or the Project Manager. Either of these individuals may assume responsibility for releasing the clearance after assuring that all steps have been completed to safely return the equipment to service. This individual will sign the Safe Clearance Request sheet release in place of the Safe Clearance Holder and will attach a signed statement to the effect that he/she has checked and verified that it is safe to return the equipment to service. In an extreme emergency, if these individuals are not available, the **Shift Operator** may assume the responsibility of releasing the Safe Clearance. A signed statement from the **Shift Operator** shall be completed, and shall state that the equipment has been checked and found ready for service, and can be placed in service without endangering the safety of personnel and/or equipment. This signed statement shall be attached to the Safe Clearance Request Form 1927-R and noted in the Station Log.

NOTE: See "Appendix C" for the form to be used.

15.2.3 Abnormal and/or improper Safe Clearance releases shall be brought to the following managers' attention:

1. Crew Foreman
2. Project Manager

16.0 TRANSFERRING OF RESPONSIBILITY FOR A SAFE CLEARANCE

Clearances will normally be transferred when the person holding the clearance is present.

16.1 Normal Transfer of a Clearance:

1. The person releasing responsibility shall:

   a. Advise the **Shift Operator** and other overlapping Safe Clearance Holders of a pending transfer.

   b. Personally advise the person assuming the responsibility of the Safe Clearance coverage.

   c. Advise the person assuming responsibility of the work already performed and the work to be performed, and of any unusual or special conditions that may exist.

   d. Advise the person assuming responsibility of any limitations in the protection provided by the Safe Clearance, and, in the case of multiple Safe Clearance protection, the names of all other Safe Clearance Holders involved. The names of the **Employees** on the

Sign In Sheet shall also be presented to the individual assuming responsibility.

e. Report, in person, along with the **employee** assuming the responsibility of the Safe Clearance, to the **Shift Operator** and both sign the Safe Clearance Request Sheet, thereby transferring responsibility to the second party.

2. The person assuming the responsibility for the SAFE CLEARANCE shall:

a. Locate all clearance points and verify that they are locked out or tagged out as appropriate. Cross out the original clearance holder's name & initials, and add their own name, initials, date and time before any work can continue.

b. Account for and notify all personnel named on the **Sign In Sheet** if and when a Group Clearance is transferred. A new **Sign In Sheet** must be prepared. All employees who signed on previously must sign off prior to signing on the new **Sign In Sheet.**

3. **The individual issuing the clearance (SHIFT OPERATOR) shall:**

a. Note in the Station Log the Safe Clearance transfer by showing the 1st person transferring, and the 2nd person accepting the Safe Clearance, Clearance Number, date and time of transfer.

16.2 Abnormal Transfer of a Clearance:

1. If, for reasons beyond control, it becomes impossible for the Authorized Safe Clearance Holder to effect the transfer of the Safe Clearance, the **Shift Operator** shall contact the appropriate Crew Foreman or the Project Manager. Either of these individuals may assume responsibility for transferring the clearance **after assuring that all steps in 16.1 have been completed to safely transfer the clearance.** This individual will sign the Safe Clearance Request transfer sheet in place of the Safe Clearance Holder and will attach a signed statement to the effect that he/she has checked and verified that it is safe to transfer the clearance.

17.0 **SAFE CLEARANCE PROCEDURES AND OUTSIDE EMPLOYERS or CONTRACTORS**

17.1 In situations where equipment installation, or modification is being performed by outside employers (contractors), the "Project Hazardous Energy Control Procedure" shall be used to ensure the safety of all employees and

equipment. All provisions of this document apply to contractors when the project lockout/tagout procedure is used.

17.2 Contractor's Hazardous Energy Control Procedures shall be applied to equipment, which has not been placed under project jurisdiction, provided that they ensure a degree of protection equal to or greater than that which would be insured by use of this Station Standing Order. This may include temporary or newly installed equipment (including, but not limited to: electrical, mechanical, pneumatic, hydraulic, or chemical). On equipment, which may affect the safety or security of employees or the integrity of the project, the government reserves the right to use its own safe clearance procedures in addition to or instead of anything the contractor might use.

17.3 Contractor's personnel shall, with the prior written approval of the designated **Responsible Project Official**, employ their own lockout/tagout devices to energy isolation devices, which have been cleared out using the project's Hazardous Energy Control Procedures. The **Authorized Government Employee** delegated for the contract shall inform the **Shift Operator** of these conditions and shall serve as the point of contact between the contractor and the **Shift Operator**. The contractor's energy control devices may be in place only during the time work is being performed and protection is needed.

17.4 The contractor's Hazardous Energy Control Procedures shall not inhibit or interfere with the project's Hazardous Energy Control Procedures.

18.0 SAFE CLEARANCE VIOLATIONS

18.1 Hazardous Energy Control Procedures are for the safety and protection of personnel and equipment. It is vitally important that **all personnel** subject to Hazardous Energy Control Procedures comply with the intent and scope of this regulation.

18.2 Any person who observes any violation of Hazardous Energy Control Procedures shall inform their supervisor **immediately**, providing all known facts of the witnessed violation.

18.3 A report of the violation shall be prepared by the witness of the act. The report of the incident shall be submitted to his/her supervisor by the end of the next working day. The report shall be forwarded to the Project Manager.

18.4 Violators will be subject to appropriate disciplinary action.

19.0 SWITCHING PERMITS

19.1 **Limitations.**

19.1.1 Certain equipment as designated by the **Crew Forman** may be operated or removed from service by an **employee** using his/her **personally identified Out of Service/Do No Operate tag and lock.** The **Shift Operator** shall be contacted in advance to determine that a Safe Clearance is not required, and to determine that other ongoing work is not in conflict. The following conditions will be in effect:

a. No more than 1 person per Switching Permit (each person must use their own tag and/or lock)
b. Lockout to be physical
c. Trainee becomes responsibility of Journeyman
d. Switching Permit and any "Abnormal Situation" related to Switching Permit must be approved and recorded by Operator
e. No over night Switching Permits. If overnight is required, will be changed to Safe Clearance
f. Switching Permit to cover no more than 2 points.

19.1.2 Permission to use **Personal Out of Service/Do Not Operate tags** will be granted by the **Shift Operator** to **employees** to operate, and/or perform minor maintenance.

19.1.3 All **SWITCHING PERMITS** will be taken and released during the **SAME WORK DAY**. A written record of their use will be kept in the Station Log; this record will include the purpose for the outage, the person to whom it is issued and the times of issue and release. The Station Log record will be the only record of the transaction.

19.1.4 The determination as to whether a **Safe Clearance or a Switching Permit** is required shall be the **Shift Operator's** responsibility. However, the **Shift Operator <u>shall not</u>** issue a **Switching Permit** if the requesting person would rather have a Safe Clearance.

19.1.5 **Switching Permits <u>will not</u>** be used on equipment under Safe Clearance.

19.1.6 The **Shift Operator** and the **employee** requesting to remove equipment from service will agree upon the switching to be performed or equipment to be operated and the points of protection to be tagged with the workman's personal **"Do Not Operate Tag"** (and personal lock if the equipment is lockable).

19.1.7 It is critical that all power plant personnel understand that, even though a **"formal"** Clearance <u>MAY</u> not be required when using a

Switching Permit, Hazardous Energy Control measures, i.e. personal lock and/or tag, are required.

19.1.8 **Switching Permit Voltage Limitations.** All authorized employees are permitted to use their **Out of Service/Do Not Operate tags** on voltages up to and including 480 volts when authorized to do so by the **Shift Operator.**

19.1.9 **"Switching Permit" work safety requirements**. All **Authorized Individuals (as defined by Crew Foreman or Project Manager)** working on the same piece of equipment must attach their personal "Do Not Operate" tag and/or lock, identified with their name, at the foremost point of safety prior to performing any work. **No exceptions** to this rule are permitted. **No one is authorized to work under another employee's personal lock and Out of Service/Do Not Operate tag.** (Refer to "Appendix B", Paragraph G for the list of personnel authorized to use Switching Permits.)

20.0 REFER TO APPENDIX E FOR EQUIPMENT ON WHICH AN "OUT OF SERVICE / DO NOT OPERATE" TAG

21.0 CAUTION ORDERS

21.1 **Caution Orders** are issued to direct attention to abnormal, hazardous, and/or unusual conditions or to special temporary operating instructions. **Caution Orders** provide protection for equipment only. **THEY SHALL NEVER BE USED TO PROVIDE PERSONAL PROTECTION.** The **Caution Order Tag** is to prevent or limit operation, or to provide other special instructions for equipment. The **Caution Order Tag NEVER** signifies that the equipment is de-energized.

21.2 Each **Caution Order** shall be assigned a number, using an "X" as a prefix. **Caution Orders** shall be numbered consecutively.

21.3 **Caution Orders** may be requested by any project employee. They shall be issued by the **Shift Operator**.

21.4 **Caution Orders** will be logged in accordance with the procedures outlined for Safe Clearances. The data entered for issue or release will conform to the data required for Safe Clearances.

21.5 A **Caution Order Sheet,** ENG Form 1928, will be prepared for each **Caution Order** issued. The completed ENG Form 1928 will be maintained as project records.

21.6 **Caution tags,** ENG Form 1924, will be properly completed and attached to appropriate control devices and equipment. The tags will be protected from adverse conditions.

21.7 **Releasing of Caution Orders.**

21.7.1 **Caution orders** shall be released and tags removed when unusual or abnormal conditions for a piece of equipment or device have been corrected, and special instructions are not required to protect the equipment.

21.7.2 Generally, a **Caution Order** should be released by the person who requested it. However, the **Shift Operator,** having been satisfied that any unusual or abnormal conditions governing the equipment covered no longer exist, may release the **Caution Order** himself.

22.0 HAZARDOUS ENERGY CONTROL INSPECTIONS and ASSESSMENTS

22.1 **INSPECTIONS.** Annual unannounced inspections shall be performed. Written inspection reports for all inspections shall include, in a standard format, these items as a minimum: (1) the clearance number, purpose of the clearance and date on which the hazardous energy control procedure was used, (2) names of employee(s) performing the inspection, (3) date of the inspection, and (4) violations.

22.2 **REQUIREMENTS FOR INSPECTION.** The **Responsible Officials** shall ensure that periodic inspections of the project HEC Program are made, and results documented, **at least annually**, and that the inspections are conducted by **Authorized Individuals who are not users of the Safe Clearance** that is being evaluated.

22.3 **ASSESSMENTS TO BE MADE.** Annual Assessments will be performed to (1) check employee knowledge of the HEC program and their responsibilities under it, (2) assure all requirements of the HEC program are being met, (3) certify that specific systems have been checked, and (4) assure that the limitations of tags are understood by **all power plant personnel**.

22.4 **FORMAT AND CONTENT.** All deficiencies found during inspections of clearance procedures shall be documented in the report, and the report shall be signed by the inspector. The inspector shall review his/her findings with the appropriate personnel. The **Responsible Officials** will certify that all periodic inspections are performed as required at the project.

23.0 HAZARDOUS ENERGY CONTROL PROGRAM TRAINING

23.1 Training (initial, annual, and appropriate retraining) will be provided as required. In addition to specific requirements, the training provided must assure that the purpose, scope, and procedures of the project's Hazardous Energy Control Program are understood by the trainee.

23.2 Documentation on all training shall include the trainee's name as well as the date, time, and location of the training. The **Responsible Officials** shall certify all training records, and the records shall become a part of the project Hazardous Energy Control records. Training records and documentation shall be maintained on the project site for a minimum of three (3) years from the date of training.

23.3 Initial training shall fulfill the requirements of ER 385-1-31 as a minimum. No **Affected Individual** shall be permitted to work on or near any equipment or system under Clearance until the individual has received initial training on the project's Hazardous Energy Control Plan and associated procedures, and until the individual has demonstrated a working knowledge of all such procedures.

23.4 Initial training provided must assure that the purpose, scope, and procedures of the project's Hazardous Energy Control Program are understood by the trainee. Specific training shall also be provided on the limitations of tags and the special requirements that must be met when using tags as part of a Safe Clearance.

23.5 **All project personnel** will be provided with annual training on the project's Hazardous Energy Control Plan and Procedures.

23.6 Failure to maintain current training status will result in immediate removal from the list of **Authorized Personnel**. Employees thus removed from the current list shall not be reinstated until they receive the required training and until such training is documented in project records.

23.7 **Retraining** shall be accomplished in accordance with the requirements of ER 385-1-31. **Retraining is training in addition to initial and annual training and is required under the following circumstances:**

1. When a change in process(es) or system(s) presents a new hazard.

2. Whenever there is a change in Hazardous Energy Control Procedures used at the project.

3. Whenever there is a change in job assignment.

4. Whenever inspections reveal, or whenever the employer has other reason to believe, that an employee's knowledge, understanding, and use of Hazardous Energy Control Procedures is inadequate or deviates from established procedures.

All Other Employee(s), as defined in Apprendix A, shall have basic awareness training.

_____	_____	_____
MICHAEL P. SHEA	David Calhoon	Reginold Haywood
Project Manager	Mechanical Crew Foreman	Electrical Crew Foreman

____ Cotter
____ Jensen
____ Lynchard
____ Williams
____ Zettel

HAZARDOUS ENERGY CONTROL PLAN

APPENDIX A

DEFINITIONS

1. **DEFINITIONS:** The following definitions are for standard Hazardous Energy Control terms used Corps-wide, as well as at this project. To avoid ambiguity and to achieve HEC Program standardization, all personnel should assure that standard terminology is used at all times.

AFFECTED EMPLOYEE: An employee working within the boundaries of another's Safe Clearance and listed as such on the Safe Clearance sign-in sheet.

AUTHORIZED EMPLOYEE: A qualified person who is designated in writing by the responsible official to request, receive, and use energy control clearance procedures. All authorized employees shall have knowledge of the type, magnitude, and hazards of the energy involved and the methods to be used to control the energy. Authorized Employee is determined by the Crew Foreman or the Worker in Charge.

CAUTION ORDER: A procedure to direct cautious approach to abnormal conditions or equipment or to special operating instructions which are to be followed.

CAUTION ORDER SHEET, ENG Form 1928: Records information pertinent to each caution order issued.

CAUTION TAG, ENG Form 1924: A tag which is attached to equipment to implement the caution order procedure.

ELECTRICAL EQUIPMENT: Any device which produces, consumes, stores, transmits, or converts electrical energy.

ELECTRICAL LINE: Any conductor used in the transmission of electrical energy from one point to another.

ENERGY ISOLATION DEVICE: A physical device that prevents the transmission or release of energy. Includes, but is not limited to, manually operated circuit breakers, disconnect switches, slide gates, slip blinds, line valves, blocks, or similar

devices, capable of blocking or isolating energy, with a position indicator. The term does not include push buttons, selector switches, and other control circuit type devices.

ENERGY SOURCE: Includes electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, stored, or other energy.

FULL PERSONNEL PROTECTION: When a tagout device is used in place of a lockout device, full personnel protection is provided when (1) the tagout device is attached at the same location as the lockout device would have been attached, (2) all tagout-related requirements of this regulation have been complied with, and (3) additional means have been taken to provide a level of safety commensurate with that of a lockout device. Such additional means include the removal of an isolating circuit element, blocking of a control switch, opening and tagging an extra (separated by distance) disconnecting device, or the removal of a valve handle to reduce the likelihood of energizing.

GROUP LOCKOUT AND TAGOUT: A lockout and tagout procedure used when servicing and/or maintenance is performed by a crew, craft, department or other group and which affords each employee a level of protection equivalent to that provided by the use of a personal lockout or tagout device.

HAZARDOUS ENERGY CONTROL PROCEDURE (SAFE CLEARANCE PROCEDURE): The written procedure which clearly and specifically identifies the hazardous energy sources and outlines the scope, purpose, responsibilities, and procedural steps for lockout and tagout and the requirements for testing the effectiveness of energy control measures to be utilized for the control of hazardous energy from stated sources.

HAZARDOUS ENERGY CONTROL PROGRAM (SAFE CLEARANCE PROGRAM): The written program consisting of energy control procedures and personnel training. Personnel training shall be both initial and periodic. The purpose of the training is to ensure that the purposes and functions of the energy control program are understood by all affected personnel and to provide the knowledge and skills required for the safe application, usage, and removal of energy controls.

ISOLATION: An activity which physically prevents the transmission or release of energy.

ISSUING EMPLOYEE (SHIFT OPERATOR): A person, qualified by their knowledge of the type and magnitude of the energy, the hazards involved, and the methods or means to control the energy, who is authorized by the responsible official to issue safe clearances. The shift operator is a person with

jurisdiction over an area or project, e.g., he may be the operator in charge of a shift at a powerhouse. At our projects the **Issuing Employee** is the Power Plant Operator in charge of the shift.

LOCKOUT: A form of hazardous energy control utilizing the placement of a locking device, in accordance with established procedures, on an energy isolating device to ensure that the energy isolating device and the system being controlled cannot be operated or release energy until the lockout device is removed.

LOCKOUT DEVICE: A device that utilizes a positive means, such as a key lock, to hold an energy isolating device in a safe position and prevent the energizing of a system.

OPERATOR DESIGNATED EMPLOYEE: This may be the lap operator, or a craftsperson in certain circumstances. This person may be delegated by the shift operator from the list of Authorized or Issuing Individuals, with the restrictions as defined in Appendix B to perform Lockout/Tagout in remote areas of the dam or project.

OTHER EMPLOYEE(S): Individuals whose work assignments do not expose them in any manner with the Hazardous Energy Control program.

PRESSURE SYSTEMS: All piping, tubing, valves, controls, and other devices which operate or are maintained above atmospheric pressure. Also, see definition of vacuum systems.

RECONFIGURATION AND/OR TEMPORARY TAG LIFT of EQUIPMENT UNDER CLEARANCE: A written change in the status of equipment that is under clearance. It may involve lifting certain tags and or removing certain locks and changing the status of the equipment that is controlled by the associated devices. This procedure may be used when necessary to change equipment status for testing or to perform other operations which are critical to maintenance. The equipment may be left in this changed condition until the clearance is released. All parties listed on the **Sign On Sheet** must sign the **Reconfiguration and/or Temporary Tag Lift** sheet and must agree on the changes to be made and that worker safety has not been compromised.

RESPONSIBLE OFFICIAL: The person in charge of the project or facility who designates the issuing and authorized individuals and who approves and directs the hazardous energy control program.

RESTRICTED AREA: Any area where hazardous conditions exist or have potential to exist, such as inside electrical vaults or tanks with potentially contaminated atmospheres.

SAFE CLEARANCE: A definite operating arrangement whereby an authorized individual, acting individually or as a representative of a crew, removes designated equipment from service by lockout or tagout. A device or point under safe clearance does not necessarily indicate a zero energy state at that device or point. When issued, the safe clearance is the authorization to perform specified work in accordance with the limits of the safe clearance. Safe clearance involves the following general steps:

1 - request for safe clearance by an authorized individual
2 - accomplish requirements for safe clearance (isolation, guarding, grounding)
3 - safe clearance issued
4 - place additional grounds, locks or barriers where needed
5 - perform work
6 - clear work area of tools and workers
7 - request for release of safe clearance
8 - release safe clearance and return of equipment to service

SAFE CLEARANCE BOUNDARIES: Generally foremost or outer perimeter of a clearance.

SAFE CLEARANCE CARD, ENG Form 1925: A card/tag for attaching to each operational control point of equipment or entry point to an area requiring a safe clearance. Computer generated labels for attachment to these cards are authorized as long as the card retains compliance with the requirements for tagout devices.

SAFE CLEARANCE PROCEDURE/PROGRAM: Same as hazardous energy control procedure/program.

SAFE CLEARANCE REQUEST FORM, ENG Form 1927-R: A form on which requests for safe clearances, safe clearance releases, and all other pertinent data in connection with safe clearances is maintained. Computer generated facsimiles are authorized.

SAFE CLEARANCE SIGN IN SHEET: A document used for group lockout and tagout which each Affected Employee signs to provide worker accountability. The Sign-in Sheet shall be used to indicate that the employees working under a group safe clearance have read the hazardous energy control procedures and understand the limits of the clearance and fully comprehend the details of the job and the energy isolation devises actuated or put in place.

STORED ENERGY: Energy (electrical, mechanical, chemical or other) that might be found in a charged capacitor, a loaded spring, chemical solutions, or similar forms.

SWITCHING PERMIT: UPON RECEIVING PERMISSION FROM THE **SHIFT OPERATOR,** a **Requester** can isolate certain designated equipment and hang a personal lock and a **"OUT OF SERVICE/DO NOT OPERATE"** tag. This can be used within the limitations defined in SECTION 19.0 and 20.0, on the operating controls while making routine inspections, testing or performing minor maintenance. If multiple isolation points are required, a clearance shall be used.

SYSTEM: Includes machinery, equipment, and electrical, hydraulic, and pneumatic lines and their subsystems.

TAGOUT: A form of hazardous energy control procedure utilizing the placement of a tag on an energy isolating point, in accordance with established hazardous energy control procedures, to indicate that the energy isolating point and the equipment being controlled may not be operated until the tag is removed or a temporary lift is performed.

TAGOUT CARD: A prominent warning device, such as a tag with a means of attachment, which can be securely attached to an energy isolating device in accordance with established procedures to indicate that the energy isolating device and system being controlled may not be operated until the tagout device is removed.

VACUUM SYSTEMS: All piping, tanks, tubing, valves, controls, and other devices which operate or are maintained below atmospheric pressure.

HAZARDOUS ENERGY CONTROL PLAN

APPENDIX B

LIST OF AUTHORIZED PERSONNEL

1. AUTHORIZED INDIVIDUALS (INDIVIDUALS AUTHORIZED TO RECEIVE SAFE CLEARANCES AND SWITCHING PERMITS).

In accordance with ER 385-1-31, the individuals listed below are authorized to receive and release Safe Clearances. The type of Clearances each individual may be issued is listed. Clearances will be issued to individuals by name only, never by position or title. The only exceptions to this will be the Powerplant Shift Operator and the Bonneville Power Administration (BPA) dispatcher.

A. **ELECTRICAL.** The following individuals may receive Safe Clearances for all electrical work to be performed on any project equipment and its connected electrical circuits. Mechanical devices associated with this equipment may be included.

(1) Scheel, Jeff
(2) Potter, Michael
(3) Bruce Chadwick
(4) Peterson, Mike
(5) Messenbrink, Dean
(6) Ben Riddle

B. **MECHANICAL.** The following individuals may receive Safe Clearances for all mechanical work to be performed on any project equipment and its connected piping. Electrical devices associated with this equipment may be included.

(1) Hansen, Lonnie
(2) Norm Clark
(3) Aaron Throop

C. **ELECTRONIC**. The following individuals may receive clearances for electronic work to be performed on project equipment.

(1) Chadwick, Bruce

D. **SUPERVISORY.** The following individual may receive Safe Clearances for all types of work on the project:

	NAME	POSITION
(1)	David Calhoon	Mechanical Crew Foreman
(2)	Reginold Haywood	Electrical Crew Foreman

E. **ON-SITE CONSTRUCTION** - The following individuals may receive Safe Clearances for all construction related work on behalf of contractors, including checkouts and testing:

	NAME	POSITION
(1)	David Calhoon	Mechanical Crew Foreman
(2)	Reginold Haywood	Electrical Crew Foreman

F. **AUTHORIZED OPERATOR/INDIVIDUAL** - The following individuals are authorized to perform switching and lockout or tagout of equipment associated with clearances which they are personnally receiving when delegated by the **Issuing Individual. (Shift Operator)**

(1)	Scheel, Jeff	(7)	Calhoon, Dave
(2)	Potter, Mike	(8)	Peterson, Mike
(3)	Clark, Norm	(9)	Shift Operator
(4)	Mesenbrink, Dean	(10)	Chadwick,Bruce
(5)	Haywood, Reginold	(11)	Hansen, Lonnie
(6)	Aaron Throop	(12)	Ben Riddel

G. **SWITCHING PERMITS.** The following individuals may receive authorization from the **Shift Operator** to use personal **"Out of Service/Do Not Operate"** tags. All personnel listed in Appendix "B", Items A through F. Other Resource and Powerhouse personnel designated to do so by their respective supervisors may also receive authorization, provided they have received formal clearance procedure training.

H. **ISSUING INDIVIDUAL(S) FOR THE PROJECT** are listed below. Special shift change considerations are listed following the names of the Issuing Individual(s).

	NAME	POSITION
(1)	Cotter, Ervin	Shift Operator
(2)	Williams, Jay	Shift Operator
(3)	Lynchard,Rodney	Shift Operator
(4)	Zettle, Steve	Shift Operator

2. RESPONSIBLE OFFICIALS(S).

The Responsible Officials for the project will normally be the Project Engineer/Manager or Crew Foreman. The Responsible Officials listed below shall fulfill all Hazardous Energy Control Program requirements for the Responsible Official as outlined in the project Hazardous Energy Control Plan and ER 385-1-31.

	NAME	POSITION
(1)	Shea, Michael	Project Manager
(2)	David Calhoon	Mechanical Crew Foreman
(3)	Reginold Haywood	Electrical Crew Foreman

_____	_____	_____
Michael Shea	David Calhoon	Reginold Haywood
Project Manager	Mechanical Crew Foreman	Electrical Crew Foreman
Libby Dam Project	Libby Dam Project	Libby Dam Project

____ Cotter
____Lynchard
____Williams
____Zettel

Revised May 19, 2004. Supercedes all previous versions.

HAZARDOUS ENERGY CONTROL PLAN

APPENDIX C

FORMS

Copies of project-specific forms used as part of the Hazardous Energy Control Program are contained in this Appendix. The following forms have been authorized by the Project Manager/Engineer for use:

NAME OF FORM	FORM DATE
1. SAFE CLEARANCE REQUEST FORM 1927-R	May 1991
2. SAFE CLEARANCE CARD (ENG FORM 1925)	August 1994
3. REQUEST FOR RECONFIGURATION OF EQUIPMENT UNDER CLEARANCE	
4. RELEASE OF CLEARANCE (ABNORMAL CONDITIONS)	
5. CAUTION ORDER SHEET (ENG FORM 1928)	April 1951
6. CAUTION TAG (ENG FORM 1924)	August 1994
7. PERSONAL OUT OF SERVICE/DO NOT OPERATE TAGS	

Appendix D

Equipment Requiring a Safe Clearance

Libby Dam

In accordance with paragraph 6.a. of ER 385-1-31, the following equipment normally requires the preparation and use of a safe clearance in order to be removed/returned to service:

NOTE: This list is not necessarily all inclusive. Other equipment inspection, troubleshooting and preventive maintenance requirements may exist.

- Main generating units
- XJ1, XJ2, XJ3, XJ4, XJ5
- SJ1 or SJ2 switchgear
- SQ1, SQ2 or SQ3 switchgear
- All transformers, 4160 volt and higher
- All isolating apparatus, 4160 volt and higher
- Emergency generator
- Emergency diesel generator circuit breakers
- Main unit governors
- Main unit governor oil pumps
- Electronic precipitron
- Spillway gates
- Sluice gates
- Drainage and unwatering pumps
- CO_2 systems
- Battery Chargers

In addition, work in certain general areas require hazardous energy control procedures. These include, but are not limited to:

- Tailrace
- Stilling Basin

Appendix E

Equipment Authorized for Switching Permits

Libby Dam

As authorized by paragraph 5.j. of ER 385-1-31 and Section 19.1 of the Libby Dam Hazardous Energy Control Program, the following equipment may be operated or removed from service without a safe clearance under the **Switching Permit** provisions of this hazardous energy control program.

Permission to use an **"Out of Service/Do Not Operate"** tag is good for one shift only. If equipment is to remain out of service for more than one shift, a safe clearance is required.

NOTE: This list is not necessarily all inclusive. Other equipment inspection, troubleshooting and preventive maintenance requirements may exist.

- Emergency Diesel Generator for PM purposes
- Elevators
- Cranes
- Water heaters
- Deck wash pump and piping
- Sewage pump, blower, comminutor
- Domestic water well pump and associated equipment
- 120, 240 and 480 volt outlet circuits only
- All electric heaters
- Lighting circuits and timers
- Telephone system (including code call)
- Unit conditioners: UC–[n]
- Fans
- Air compressors and associated equipment (ACB or governor, only one at a time)
- Shop equipment - electrical and mechanical
- Oil storage room pumps and motors
- Main unit greasers
- Strainers
- Sprinkler systems
- Fuel dispenser pumps
- Main unit governor on pumps PM purposes (only one at a time)
- Generator cooling water supply pumps
- Heating and ventilation systems
- Automatic garage door openers

RELEASE OF CLEARANCE

(ABNORMAL CONDITIONS)

This form is to be completed and made a part of the record of any Clearance which can not be released by the current Clearance Holder in the conventional manner.

Reference: ER 385-1-31, Station Standing Order No. 1

Supervisors shall be contacted in the following order:

(1) Crew Foreman
(2) Project Manager
(3) Issuing Individual (Shift Operator

I, _____ hereby assume full responsibility for Clearance # _____.

I have thoroughly checked the equipment personally, using all available personnel who are familiar with the equipment, and found it ready for service. All personnel are informed and clear. The equipment can be placed into service without danger to personnel or equipment.

SIGNATURE OF PERSON RELEASING CLEARANCE:

_____

SIGNATURE OF SHIFT OPERATOR WITNESSING RELEASE:

_____

DATE: _____ TIME: _____

DIRECTIONS: The Clearance Order Sheet must be personally signed by the supervisor or the issuing individual that released the clearance within the same calendar day. A clearance released under abnormal conditions may necessitate forceful removal of any lockout devices used. When completed, attach this form to the "Clearance Order Sheet," and make appropriate log entry.

When a Clearance is released under abnormal conditions, it shall be brought to the attention of the Crew Foreman. If the Crew Foreman is not available, notify the Project Manager.

REQUEST FOR RECONFIGURATION OR TEMPORARY TAG LIFT OF EQUIPMENT UNDER CLEARANCE

Check one: ☐ Temporary Lift ☐ Reconfiguration

This form is to be completed and signed by the Clearance Holder whenever the status of any equipment under Clearance must be reconfigured.
Reference: ER 385-1-31, Station Standing Order # 1

Clearance Holder requesting change: _____

Clearance Number: _____ Lock Color: _____

Specific operations to be performed and specific tag number and description of tags to be lifted:

_____

_____

_____

_____

Beginning of Operation:	Date	Time	Ending of Operation:	Date	Time
	_____	_____		_____	_____

Clearance Holder and Affected Personnel will sign below agreeing to the requested operations. Clearance Holder shall inform all Affected Personnel as to what operations are being performed and the effect it will have on their assigned duties. Lockout/tagout devices shall be removed from all clearance points which must be reconfigured. No changes to clearance status are allowed outside of times and dates specified above. Shift operator is responsible for seeing to the replacement of lockout/tagout devices in accordance with the Station Standing Order.

Signatures below of clearance holder and those signed in on the master sign in sheet for this clearance acknowledging they fully understand the effects this change will have on them:

Beginning of Operation:	Ending of Operation:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Shift Operator agrees to requested operation and is satisfied that Clearance Holder is in agreement and knowledgeable of the new configuration.

Shift Operator: _____ Date: _____

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SECTION J4

LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

LITTLE GOOSE DAM SPARE TRANSFORMER

TABLE OF CONTENTS

DOCUMENT TYPE	DESCRIPTION
J4-A	Drawing Index
J4-B	Section C4 (Technical Specifications)

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ATTACHMENT J4-A

DRAWING INDEX

Spare Transformer Supply,
Little Goose Dam and Reservoir,
Snake River, Washington

DRAWING NUMBER	SHEET NUMBER	TITLE	REVISION NUMBER	DATE
LGP-5.11-0-0/1	1	Project Location and Vicinity Maps		7 JAN 05
LGP -5.11-0-0/2	2	Index of Drawings		7 JAN 05
LGP -5.11-6-1A40/1	3	Transformer Layout		7 JAN 05
LGP -5.11-6-9F24/1	4	Transformer Control and Schematic Diagrams		7 JAN 05
LGP -5.11-6-9F24/2	5	Transformer Control Cabinet External Connections		7 JAN 05

REFERENCE DRAWINGS

Reference drawings provided show conditions at time of construction. These drawings are furnished for information only and the Government does not warrant that conditions will be exactly as shown. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation.

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV NO.	DATE
1359C14		Westinghouse/Type "RJ" Bushing – 25 kV-7500 Amp	2	5-18-76
75160003		Westinghouse/Flanges and Bushing		10 DEC 79
763C055		Westinghouse/Type "O" Bushing – 1600 Amp, 1550 Bil – for 500 kV	5	4-29-76
75C-160-3		Westinghouse/Ground Pads and Terminals		10 DEC 79
EBM1257-01		Transformer, Class OF/FA/ Shell Form, Outdoor, Single Phase	4	12-21-77
EBM1257-02		Transformer, Class OF/FA/ Shell Form, Outdoor, Single Phase	3	5-12-76
EBM1257-03		Transformer, Class OF/FA/ Shell Form, Outdoor, Single Phase	3	5-12-76
EBM1257-04		OF/FA Transformer Control Schematic Wiring Diagram		7 JAN 05

REFERENCE DRAWING NUMBER	ORIGINAL PLATE NUMBER	TITLE	REV NO.	DATE
EBM1257-05		OF/FA Transformer Control Connection Wiring Diagram		7 JAN 05
GDD-1-4-2/39		North Non-Overflow Reinforcement V	D	5 MAR 73
GDP-1.5-6-1A5-1		Main Power Transformers	B	30 SEP 80
GDP-1.5-6-1A5-2		High Voltage Equipment, Sheet 1	D	30 SEP 80
LGP-1.9-4-2/24		Intake Deck El. 651 Sheet 1	B	01 APR 81
LGP-5-6-1A5/1		Main Power Transformers	A	5 MAY 75
LMP-1.8-4-2/24		Intake Deck El. 553 Sheet 1	B	02 MAR 81
T-170021		Transformer Compartment Assembly		2 MAR 81
U-122317		Isolated Phase Bus Extension and Associated Support Structure Assembly, For Spare Transformer Installation	2	10-15-80

Attachment J4-B

SECTION C4

DESCRIPTIVE/SPECIFICATIONS/WORK STATEMENT

1.1 DESCRIPTION OF WORK

This section covers the technical specifications for the supply of equipment described in The Schedule, together with all accessories and spare parts specified therein. The work described within these specifications shall include, but not necessarily be limited to the following:

(1) Design, manufacture, and factory test one single-phase generator step-up power transformer rated 82,000/109,334 kVA, 500 kV GrdY high-voltage, 13.2 kV – 13.2 kV low-voltage, Class ONAN/ONAF cooling, furnish slings, jacks and tools, and furnish spare parts. (SECTION 16277)

(2) Deliver the transformer f.o.b. Little Goose Dam, offload the transformer, movement of the transformer to the permanent storage location, assemble the transformer as required for long-term storage, oil fill the transformer, perform field tests, provide services of a manufacturer's erecting engineer, and provide training to Government personnel. (SECTION 01600)

(3) Perform work required to comply with site operations and safety and health provisions. (SECTION 01010)

(4) Perform work required to comply with environmental protection. (SECTION 01355)

The spare transformer will be used to replace a failed transformer at Little Goose, Lower Monumental or Lower Granite, and will be moved to one of the other two projects under another contract should a transformer at one of the other two projects fail.

1.2 SPECIFICATIONS

Technical specifications cover the detailed requirements for the equipment and services listed in the Schedule and below.

SECTION	TITLE
01010	CONTRACTOR'S SITE OPERATIONS
01270	MEASUREMENT AND PAYMENT
01306	OPERATIONS AND MAINTENANCE DATA
01330	SUBMITTAL PROCEDURES
01355	ENVIRONMENTAL PROTECTION
01420	SOURCE OF REFERENCED PUBLICATIONS
01600	TRANSFORMER SHIPMENT, HAULING, AND SITE ASSEMBLY
16277	CLASS II POWER TRANSFORMER

1.3 DEFINITIONS

(1) Wherever in the specifications, or upon the drawings, the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription" of the Contracting Officer is intended, and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by" or "acceptable to" or "satisfactory to" the Contracting Officer unless otherwise expressly stated.

(2) Where "as shown", "as indicated", "as detailed", or words of like import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provided complete in place", that is, "furnished and installed". (FAR 52.236.21(b) and (c)).

(3) Wherever in these specifications or upon the drawings, the words "Contracting Officer" (CO) or "Contracting Officer's Representative" (COR) are used, it shall be understood to also mean "Government" unless otherwise expressly stated.

(4) Wherever in these specifications the acronym "GQAR" is used, it shall be understood to mean "Government Quality Assurance Representative", unless otherwise expressly stated.

(5) Wherever in these specifications the work "weekend(s)" is used, it shall be understood to mean "Saturday, Sunday, and Federal Holidays", unless otherwise expressly stated.

-- End of Document --

SECTION 01010

CONTRACTOR'S SITE OPERATIONS

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1.28 PERMITS AND RESPONSIBILITIES
1.29 QUALITY CONTROL AT THE JOB SITE

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

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SECTION 01010

CONTRACTOR'S SITE OPERATIONS

PART 1 GENERAL

1.1 GENERAL INFORMATION

This SECTION covers the general requirements applicable to specific Contractor's operations or equipment for work performed on site.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by basic definition only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

AASHTO	American Association of State Highway Transportation Officials
DOT	Manual on Uniform Traffic Control Devices For Streets and Highways

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Loading Plan; G, AO

A minimum of 30 calendar days prior to on-site work (see paragraph 1.14, "CRANES AND HEAVY EQUIPMENT").

2. Contractor's Work Supervisor(s) Qualifications; G, AO

Qualifications and identification of Contractor's agent(s), a minimum of 10 calendar days prior to the start of site work (see paragraph 1.18.1, "Contractor's Work Supervisor(s)").

3. Scaffolding, Ladder, Stairway or Other Access Schemes; G, AO

A minimum of 30 calendar days prior to their installation and use (see paragraph 1.24, "SCAFFOLDING").

4. Site Work Schedule; G, AO

Site work schedule, a minimum of 10 calendar days prior to the start of site work and updated weekly (see paragraph 1.26, "SITE WORK SCHEDULE").

1.4 PROJECT SECURITY

1.4.1 General

The project site is a secured area and access onto the project is restricted. The security measures affect all of the Contractor's vehicles and personnel. There will be delays when entering projects due to locked gates, vehicle inspections, and personnel checks. Inspections and checks may include inspection of tool boxes, brief cases, lunch boxes, and other containers.

1.4.2 Vehicle Access

Project access roads are secured with locked gates. All vehicles that pass thru the locked gates will be subject to being searched. No privately owned vehicles (POV's) will be allowed thru locked gates. Only Contractor's work vehicles and equipment that are essential to the conduct of the work will be allowed in the work areas. All Contractor vehicles shall display suitable permanent or temporary identification.

1. 4.3 Identification of Employees

The Contractor shall be responsible for furnishing identification and other information to the project POC for each employee prior to the employee’s work on the project site, and for requiring each employee on the project site to display identification at all times. Identification shall include photo identification, company name, and the individual’s name and company identification number as a minimum. Badges will be laminated plastic type. All prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon the release of the employee. If required by the Contracting Officer employees will be photographed by the Government. Employees who fail to submit to photographing will not be allowed on the project site.

1.4.4 Delivery of Equipment

Delivery of equipment and materials to the project site shall arrive during the normal working hours of the project maintenance crews described in paragraph WORK SCHEDULES. To the maximum extent possible deliveries shall arrive on the same side of the river as the Contractor's work area. Delivery vehicles will not be allowed to cross the river over the dam. Delivery vehicles arriving on the opposite side of the river as the work area shall be unloaded outside the locked gate, equipment shall be loaded onto Contractor's vehicles, and Contractor's vehicles will then be allowed to cross the dam to the work area.

1.5 NTO USED

1.6 NOT USED

1.7 PLANT AND EQUIPMENT LIST

A complete list of all plant and equipment, exclusive of shop equipment, to be used on the project shall be furnished at the Contractor/Government Coordination Meeting. The lists shall include rented equipment as well as lease-purchase or sale-leaseback equipment, dates equipment is assigned to or removed from the project, dates deadlined for repairs and returned for use, and adequate identification or description of each item of equipment including manufacturer's name (abbreviated), model number, manufacturer's serial number, year of manufacture, and Contractor's assigned serial or record number.

1.8 EXISTING FACILITIES

1.8.1 Sanitation Facilities

Use of the project restroom facilities will not be made available to the Contractor. The Contractor shall furnish his own sanitation facilities in accordance with EM 385-1-1. The sanitation facilities shall be located outside the powerhouse at locations coordinated and approved by the GQAR. The Contractor shall provide freeze protection during the months October through March to prevent any spillage.approved by the GQAR.

1.8.2 Elevators

Use of the elevators shall be coordinated with the GQAR. All Powerhouse elevators are used for Government personnel and equipment transport, and no freight elevators exist at the Little Goose Dam powerhouse. The elevators shall not be used to move equipment and material that interferes with personnel use. Any Contractor caused abuse or damage of the Powerhouse elevators will result in denial of continued use, and any needed repairs will be charged to the Contractor.

1.9 UTILITIES

1.9.1 Government Furnished Utilities

All utilities that are required for use in performance of the work under this contract shall be Contractor-furnished except as noted below:

(1) Water. All reasonable amounts of non-potable water will be made available from existing outlets. Contractor shall freeze proof all outdoor water systems being used in his operations during the winter months; October through March.

(2) Electricity. Electric power in the area may be obtained from the following existing sources :

(a) 120-volt, 1-phase, 20-amperes

(b) 480-volt, 3-phase 30-amperes

1.9.2 Temporary Utility Connections

All utilities provided by the Government shall be at no cost. Care shall be exercised in conserving all Government-furnished utilities. Extension cords shall be Contractor-furnished. All temporary utility connections shall be subject to approval. The location of all power lines and all temporary connections for electricity shall be coordinated with the GQAR. All temporary circuits and devices shall be provided, connected, and maintained and removed prior to final acceptance. Ground fault protection for all circuits used shall be Contractor-furnished.

1.9.3 Telephone

The Contractor shall be responsible for furnishing all telephone service needed by him on the job site. The Project telephone system will not be available to the Contractor. There is limited Cellular phone service available at the Little Goose Dam area.

1.10 CONTRACTOR'S MISCELLANEOUS STRUCTURES

The building of structures, the erection of tents or other forms of protection, will be permitted only at such places as the Government shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a satisfactory manner. Temporary Contractor facilities provided during Construction shall be removed upon satisfactory completion of the last unit's operational tests. As a minimum the area shall be left looking "broom clean" and at least as clean as before the structure placement.

1.11 SAFE CLEARANCE PROCEDURES

The Little Goose Dam project personnel use a Safe Clearance System, to ensure continuity of service and safety to personnel and equipment. Any work performed which requires taking the Project's operating equipment out of service will be done only after a formal clearance is obtained by the GQAR through the Little Goose Dam Control Room Operators with 48-hour minimum notice. Contractor personnel shall not violate clearance. Any violation of Safe Clearance Procedures will be grounds for removal of the offender(s). Up to five copies of The Little Goose Dam Safe Clearance Procedure will be supplied to the Contractor upon request.

1.12 DAILY CLEANUP AND DISPOSAL

All debris resulting from the work, such as waste metalwork, packing cases, scrap lumber, oil and grease spills, and other debris shall be collected, removed, and disposed of off-site at least once per week. The Government's trash cans, dump boxes and other containers shall not be used. Liquid waste shall not be disposed of in powerhouse drains. All costs of removing debris shall be incidental to the work, and no separate payment will be made therefore.

1.13 STORAGE OF EQUIPMENT AND MATERIALS

Storage of equipment and materials will be permitted only in designated staging areas. A minimum access space of three feet shall be maintained between the Contractor's stored items and the existing powerhouse equipment.

1.14 CRANES AND HEAVY EQUIPMENT

1.14.1 Contractor Crane Safety

Contractor's cranes and equipment furnished for this work shall conform with all applicable OSHA requirements and referenced EM 385-1-1 in Section I, clause ACCIDENT PREVENTION including ALT1. Contractor shall submit a lifting diagram addressing such issues as lift, trim, maximum load, maximum wind speed, lifting radius and all other applicable information required by EM 385-1-1 and OSHA as part of the Loading Plan.

1.14.2 Contractor Crane Testing

All Contractor cranes shall be tested in accordance with EM 385-1-1 prior to use on the project and the tests shall be witnessed by the GQAR. Forty-eight hours notice of the test, excluding weekends and federal holidays, shall be given by the Contractor.

1.14.3 Contractor's Cranes and Heavy Equipment

A Loading Plan, which includes the planned method of transportation and operation of Contractor provided cranes and other heavy equipment to be used in the performance of this contract, shall be shall be submitted for government approval and coordinated with the GQAR. This shall include the type, size, loading, and placement of outriggers of all cranes or heavy equipment and the proposed transportation routes and work areas to be used on the project. Operation of heavy equipment adjacent to existing structures shall be avoided when possible.

1.14.4 Movement of Equipment and Materials by the Contractor

The Contractor shall provide all cranes, rigging, lifts, operators, and other necessary means to move equipment or material as required to pursue and complete the work whether owned by the Government or by the Contractor unless otherwise specifically mentioned. This includes but is not limited to the unloading and loading of equipment and material.

1.14.5 Use of Government Cranes

Government cranes will not be available for the Contractor's use.

1.15 DAMAGED EQUIPMENT OR ABNORMAL CONDITIONS

The GQAR shall be informed immediately upon finding any damaged equipment or other abnormal conditions involving additional work in which the Contractor believes he has no responsibility. The failure or abnormality shall not be disturbed until witnessed. Any damage or abnormal conditions not reported as specified above but discovered at a later date, shall be corrected at the Contractor's expense.

1.16 PROTECTION OF MATERIAL AND WORK

Materials, supplies, tools, equipment and Government property (including all tools, equipment, and special devices supplied by the Contractor and to be turned over to the Government at the end of the Contract) shall be protected and preserved in accordance with manufacturer's recommendations. If material, equipment, supplies, and work performed are not adequately

protected, such property may be protected by the Government and the cost thereof will be charged to the Contractor or deducted from any payment due.

1.17 DRAWINGS AND MANUALS

Any additional existing drawings and manuals required for the work that are not included herein will be available for viewing at The Little Goose Dam Project Administration Building, during normal project day shift working hours, from 6:30 am to 5:00 PM, Monday through Thursday. Drawings and manuals shall not be removed from the office. However two copies of available technical data and drawings not included in the reference drawings will be made at no cost to the Contractor within five calendar days, after the request for such copies has been made.

1.18 CONTRACTOR'S WORK SUPERVISOR AND PERSONNEL

1.18.1 Contractor's Work Supervisor(s)

At least one full-time employee of the Contractor shall be available at the worksite anytime other Contractor or subcontractor personnel are working on the site to supervise and direct the work specified herein. Supervisor(s) shall be present at the site during transformer assembly and installation, and shall be responsible for providing complete and correct direction of all installation work. The supervisor(s) shall be responsible for following the Government's Safe Clearance Procedure, paragraph 1.11. The supervisor(s) shall be fluent in the spoken and written English language. The supervisor(s) shall have been engaged in similar generator step-up power transformer installation field work, as is specified herein, for a minimum of three years, and shall have performed this work at a minimum of two different facilities. The Contractor's Work Supervisor(s) Qualifications, experience, a verifying contact, name and phone number shall be submitted for at least two such facilities.

1.18.2 Contractor's General Personnel

(1) General. The Contractor shall prepare and revise whenever organizational changes occur, a project organization chart reflecting at least those positions described herein and defining their work relationships, etc. The Contractor shall maintain a complete organizational chart of all positions that will be working on the project. All personnel employed by the Contractor shall be fully qualified in their respective fields to render the services necessary. The Contractor's organizational plan shall be maintained in the CQC Plan and submitted upon request by the GQAR.

(2) Identification of Contractor's Employees. The Contractor shall be responsible for furnishing to each employee at the powerhouse and for requiring each employee at the powerhouse to display such identification as approved and specified below. All Contractor personnel, prior to engaging in work on project premises, shall either be issued an identification card by the Contractors or agree to provide their driver's license as I.D. upon request. If the Contractor so decides to furnish I.D. cards to all employees, the card must include the following information:

Name of Contractor
Name of Employee

Birth date
Weight
Hair color
Eye color
Recent photo

All prescribed identifications shall be returned immediately to the Contractor upon release of any employee. The Contractor shall include a list of all Contractor employees, which includes their titles and who will be working on the project. This listing shall be revised and resubmitted when personnel changes occur. When required by the Government, the Contractor shall obtain and submit fingerprints of all persons employed to work at the Little Goose Dam Project.

1.19 PROTECTION AND RESTORATION OF EXISTING FACILITIES

Existing facilities shall be protected whether or not shown on the drawings. Upon completion of the work, existing facilities, not included as a portion of the work, shall be left in a condition equal to the original condition prior to the contract. Costs for repair and restoration of any facilities shall be considered to be incidental to and included in the contract price.

1.20 CARE OF DRAINS

Existing powerhouse floor drains including the unwatering drains and transformer cell drains shall not be used for disposal of any solid material and or any liquids other than clear water. The Contractor shall clean Contractor-obstructed drains. Costs incurred in the cleaning and clearing of plugged drains, shall be borne by the Contractor.

1.21 WORK BY THE GOVERNMENT CONCURRENT WITH CONTRACTOR WORK

The Government will limit interference with the Contractor's work to the maximum reasonable extent and the Government and Contractor shall coordinate as necessary.

1.22 NOISE CONTROL

Noise control and noise levels shall conform to requirements set forth in the appropriate regulations, including EM 385-1-1, Section 05.C, 29 CFR 1910.95, 29 CFR 1926.52 and .101. The most conservative requirement shall govern.

1.23 BARRICADES AND DANGER, DETOUR AND WARNING SIGNS

1.23.1 Barricades, and Danger and Detour Signs

The Contractor shall provide, erect, and maintain barricades, red lights, danger signals, and detour and other signs; provide watchmen; and take precautions for the protection of the work and the safety of the public. Powerhouse galleries, floors, Project roads, etc. obstructed or closed to traffic shall be protected by barricades. Obstructions shall be continuously illuminated day and night. Lanterns or flares shall illuminate warning signs day and night. The signs, signals and barricades shall comply with EM 385-1-1 SECTION 08, 29 CFR 1910.145 and 29 CFR 1926 SUBPART G.

1.23.2 Warning Signs

Warning signs shall be erected 500 feet in advance of any place on the project where operations interfere with the use of a road by traffic. Warning signs shall conform to the standards established in Part IV of the DOT "Manual on Uniform Traffic Control Devices for Streets and Highways".

1.24 SCAFFOLDING

Scaffolding, ladder, stairway, or other access schemes proposed for use shall be submitted for approval, including type, layout, and connections. Approved anti-slip surface material shall be installed on scaffolding platforms. Scaffolding shall comply with EM 385-1-1.

1.25 SITE WORKING HOURS

1.25.1 Government Project Personnel Working Hours

The scheduled working hours of the Project staff are Mondays through Thursdays from 6:30 a.m. until 5:00 p.m. Fridays, Saturdays and Sundays are non-work days. Crews and staff do not work on Federal Holidays. All Project support required by the Contractor shall be scheduled during the Project staff working hours.

1.25.2 Contractor's Working Hours

The Contractor's desired working hours are between 6:30 a.m. and 5:00 p.m., Monday through Thursday. The schedule of work hours, shifts and days of the week shall be coordinated with the GQAR. Notification of any proposed changes of the schedule of regular work hours, overtime work hours, and shifts of work crews and personnel at the site shall be coordinated with the GQAR.

1.26 SITE WORK SCHEDULE

A Site Work Schedule shall be submitted and shall including major and minor work elements and stages of the work. These documents shall be updated and submitted to reflect the actual work elements and progress and that anticipated in the future.

1.27 SITE INVESTIGATIONS AND CONDITIONS AFFECTING THE WORK

The Contractor shall take steps reasonably necessary to ascertain the nature and location of the work, the general and local conditions shall be investigated which can affect the work or its cost, including but not limited to the following. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expenses to the Government. The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless the understanding or representation is expressly stated in this contract.

(1) Conditions bearing upon transportation, disposal, handling, and storage of materials.

(2) The availability of labor, water, electrical power, and roads.

(3) Uncertainties of weather, river stages, or similar physical conditions at the site.

(4) The conformation and conditions of the ground and equipment and facilities to be replaced and/or rehabilitated.

(5) The character of equipment and facilities needed preliminary to and during work performance.

(6) The amount of work space, accessibility, lighting, etc.

1.28 PERMITS AND RESPONSIBILITIES

The Contractor shall, without additional expense to the Government, be responsible for obtaining necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and property of others. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for completed unit of work that may have been accepted under the contract.

1.29 QUALITY CONTROL AT THE JOB SITE

The Contractor's quality control system shall encompass actions involving selection of construction material sources and suppliers, on-site and off-site fabrication of Contractor-furnished items to be included in the work, on-site and off-site production of construction materials, work placement procedures, workmanship, inspection, and testing. The system shall provide supervision, inspection, and tests of all items of work, including that of its suppliers and subcontractors, that will assure the compliance of all work with applicable specifications and drawings in respect to the Contractor furnished equipment, materials, workmanship, construction, finish, functional performance, and identification. The Contractor's system shall encompass all management and supervisory actions taken by its staff that affect quality of the finished construction work, including all inspection controls and tests required for compliance with the contract, except for those inspections and tests specifically reserved to be accomplished by the Government.

-- End of Section --

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SECTION 01270

MEASUREMENT AND PAYMENT

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(NOT USED)

PART 3 EXECUTION

(NOT USED)

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL INFORMATION

In each instance the contract price for an item will constitute full compensation as herein specified, as shown, or as otherwise approved. The contract price and payment will also constitute full compensation for all work incidental to completion of the item, unless such work is otherwise specifically mentioned for separate payment under another bid item. In the event any work is required by the specification sections or by the drawings and not specifically mentioned in the measurement and payment paragraphs, separate or direct payment will not be made and all costs thereof are incidental to and included in the contract prices and payments for all items listed in the bid schedule.

1.2 MEASUREMENT

Items measured as a Lump Sum (LS) will be measured for payment as a completed job, in place, in the locations indicated. This measurement includes all incidental work and materials that are necessary to make a complete job. Unless the payment paragraph makes a specific exception of an item, incidental items will not be measured under another item.

1.3 PAYMENT

1.3.1 General

Payment for all work specified, shown, or incidental to complete the work will be made as follows:

(1) Line Item No. 4001; Design one 82,000/109,334 kVA, 500 kV, Class ONAN/ONAF, Single Phase Spare Power Transformer.

Payment shall be full compensation for performing all work to design the transformer, complete, as specified and as approved. This design is considered a single event, and no design costs shall be loaded into the manufacturing costs.

(2) Line Item No. 4002; Manufacture, Factory Test, and Deliver One 82,000/109,334 kVA, 500 kV, Class ONAN/ONAF, Single Phase Spare Power Transformer and Accessories Complete to Railhead in Ayer, Washington, and Provide Services of Erecting Engineer.

Payment shall be full compensation for the labor, materials, equipment and transportation required to manufacture, test, and deliver the transformer and accessories by rail to Ayer, Washington, including O&M manuals and erecting engineer services.

(3) Line Item No. 4003; Perform delivery inspection, and truck transport transformer and accessories from railhead in Ayer, Washington, to the Little Goose Dam Powerhouse.

Payment shall be full compensation for the labor, materials and equipment required to perform an inspection of the transformer on the railcar, off-load the transformer and accessories from the railcar onto a transport truck, and transport the transformer and accessories to the Little Goose Dam powerhouse.

(4) Line Item No. 4004; Offload Transformer and Accessories at Little Goose Dam, Perform Inspection and Tests, Move Transformer to Permanent Storage Location, and Assemble the Transformer.

Payment shall be full compensation for the labor, materials and equipment required to perform the inspections and tests on the transformer prior to off-loading from the transport truck at the Little Goose Dam Powerhouse, movement of the transformer and accessories to the permanent storage location, placement of the transformer onto the concrete mounting pad, and complete assembly of the transformer.

(5) Line Item No. 4005; Furnish Transformer Oil, Oil-Fill Transformer, and Perform Field Tests.

Payment shall be full compensation for the labor, materials and equipment required to deliver the new transformer oil, hot oil fill the transformer under vacuum, and perform all required field tests.

(6) Line Item No. 4006; Furnish Jacks, and Tools.

Furnishing jacks and special tools necessary to move and guide the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the required equipment and tools, complete, as specified and as approved.

(7) Line Item No. 4007; Furnish Spare Parts.

Furnishing spare parts for the transformer will be measured for payment as a complete pay item (Lot). Payment will be made at the contract lump sum price, which price and payment shall be full compensation for furnishing the spare parts for the transformer, complete, as specified in SECTION 16277 paragraph 2.16, and as approved.

(8) Line Item No. 4008; Contractor Furnished Training.

Contractor furnished training will be measured for payment as a complete pay item (Lump Sum). Payment shall be full compensation for performing training of Government personnel, complete, as specified in SECTION 01600 paragraph 3.12, and as approved.

PART 2 PRODUCTS/ PART 3 EXECUTION

(NOT USED)

-- End of Section --

SECTION 01306

OPERATIONS AND MAINTENANCE DATA

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SECTION 01306

OPERATIONS AND MAINTENANCE DATA

PART 1 GENERAL

1.1 GENERAL INFORMATION

Parts catalogs and operating instructions needed or useful in operation, maintenance, repairs, dismantling, or assembling, and for repair and identification of parts for ordering replacements, shall be especially prepared. The parts catalogs and operating instructions shall cover all equipment furnished under this contract and shall be assembled under a suitable common cover. The assembled material shall include complete identification of the spare parts furnished in compliance with the requirements of these specifications.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES":

SD-10 Operation and Maintenance Data

1. Initial Submittal of Operations and Maintenance Data; G,

An initial submittal of three complete draft copies of the Operations and Maintenance Data shall be made not less than 45 days prior to delivery of the equipment. The COR will return one draft copy with appropriate approval of, or comment on, the acceptability of the submittal. The Contractor shall resubmit the one draft copy with such corrected and/or additional data sheets and drawings as may be directed by the COR. One copy of each revised data sheet and drawings shall be furnished also for each of the two draft copies retained by the COR.

2. Final Submittal of Operations and Maintenance Data; G,

Upon "Final" approval of the draft copies of the Operations and Maintenance Data, the Contractor shall submit three additional copies for a total of six to the COR. All copies shall be furnished no later than the date specified for delivery of the equipment.

PART 2 PRODUCTS

2.1 BINDER REQUIREMENTS

Data for equipment shall be assembled in a binder for 8 ½ by 11 inch sheets with slide binding or screwpost fastening for replacement. Loose-leaf binders are not acceptable. A title on the cover shall show the information stated in paragraph 3.2 (1)-(7).

PART 3 EXECUTION

3.1 SPECIFIC REQUIREMENTS

Shop assembly or special drawings shall be of a size that requires folding only in left to right coordinate. (11" X 17" maximum, 8-½" X 11" minimum) A permanent reproducible shall be furnished for all drawings. This reproducible shall be in addition to the five copies specified. Each sheet shall be numbered and a revised index for the existing manual shall be provided. One copy of such manual shall contain all original versions of standard catalog cuts, manufacturer's data, parts sheets, and illustrations. All other copies shall be readable and non-permanent or non-water-resistant copies are not acceptable. All nonapplicable data such as description of other models, optional equipment not included, etc. shall be marked out. If reference is made to other drawings or data they shall be included. The O&M data shall list equipment covered; the manufacturer; and name, address, and telephone number of the local representative.

3.2 FORMAT

Binders shall be side-binding, telescoping-post, expandable-back, and shall have a supported vinyl cover with a stiff binder board for 8 1/2- by 11-inch sheets. Ring-type loose leaf binders will not be acceptable. One source of acceptable binders is as follows:

Arts & Crafts Book Manufacturing
E 618 Second Avenue
Spokane, Washington 99202
Telephone: (509) 747-3818

One 11- by 17-inch copy of each of the drawings approved under this contract shall be furnished and shall be folded and bound for easy unfolding without removal from the binder. Each sheet in the binder shall be numbered and an index provided for ready reference to the data. All standard catalog cuts, manufacturer's printed data or descriptive literature, parts sheets, illustrations, etc., shall be either original manufacturer sheets or reproduced copies of equal clarity and durability. The following identification shall be inscribed on both the spines and covers:

(1) The words "OPERATIONS AND MAINTENANCE MANUAL."

(2) The name and location of the building, facility, and/or project.

(3) The volume number and total number of volumes.

(4) The systems and/or equipment therein.

(5) The name of the Contractor.

(6) The contract number.

(7) The year of completion of the contract.

3.3 CONTENT

The O&M manuals shall be structured to address each of the following topics in order for each system. When the topic does not apply to a particular system the topic name will be included in the manual with the words "DOES NOT APPLY."

3.3.1 Warning Page

A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

3.3.2 Index

Each manual shall have a master index at the front identifying all manuals and volumes and subject matter by system name for each. Following the master index, each manual shall have an index of its enclosures listing each volume, tab numbers, etc., as necessary to readily refer to a particular operating or maintenance instruction. Rigid tabbed fly leaf sheets shall be provided for each separate product and/or piece of equipment under each system in the manual. When a manual is divided into volumes, each volume shall have a master index at its front, followed by an index for the specific volume listing in detail all enclosed instructions for materials, individual pieces of equipment, and systems. All pages shall be numbered with the referenced number included in the index.

3.3.3 Description

Narrative and technical descriptions of the system and of the interrelations with other systems shall be provided.

3.3.4 Catalog Data Sheets

All catalog data sheets shall be inserted in an appendix at the end of the manual following the preventative maintenance (PM) charts appendix. This appendix shall be for catalog data sheets only. An index of the catalog data sheets shall be provided to provide clear and concise reference to shop drawings and individual pages within the manual. Standard catalog data sheets will not be acceptable unless irrelevant parts are marked out (with black "X") and relevant parts clearly identified. Any data on catalog sheets which does not directly relate to purchased equipment shall be marked out. Parts shall be so identified that they can be readily ordered from local area industrial supply outlets if not of special manufacture. A cross-reference between items described in catalogs, instructions, and drawings shall be provided to facilitate ease of location of parts described. Highlighting and "scribble notes" will not be acceptable

for identification purposes. Catalog data sheets shall be inserted into the manual such that positive identification of all parts on catalog data sheets are clearly identified by:

(1) Part Name. A clear and descriptive name shall be given to each component in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and telephone number of the manufacturer shall be given along with the catalog part number.

(3) Material Safety Data Sheet (MSDS). A copy of the MSDS for the transformer oil shall be included with the catalog data sheets.

3.3.5 Spare Parts Listing

The spare parts listing shall be inserted in an appendix at the end of the manual following the catalog data sheets. This appendix shall be for spare parts listing only. The spare parts listing shall clearly state the spare parts supplied and a list of recommended spare parts to be stocked. The spare parts listing shall clearly identify:

(1) Part Name. A clear and descriptive name shall be given to each component listed as a spare part in the piece of equipment.

(2) Manufacturer and Part Number. The name, address, and Telephone number of the manufacturer shall be given along with the catalog part number.

(3) Quantity. The quantity of each part listed as a spare part shall be given.

(4) Reference to Catalog Data Sheets. Each spare part shall be referenced to the corresponding catalog data sheet by page number.

(5) Price.

3.3.6 Operation Data

The operation data shall include specific operating instructions, functional description of operating parts, and special precautions or procedures to be considered. The Contractor shall be responsible for the necessary coordination between his subcontractors, suppliers, and manufacturers to assure complete submittals on individual interrelated equipment components. The data shall include the following:

(1) Check List Prior to Start Up. Precautions and prechecks prior to start up of equipment and/or system, including safety devices, monitoring devices and control sequence shall be provided.

(2) Start Up and Operation. Step-by-step sequential procedures For start up and normal operation checks for satisfactory operation shall be provided. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the operating instructions and flagged for the

attention of the operator. Procedures shall include test, manual or normal, and automatic modes.

(3) Shutdown. Procedures for normal and emergency shutdown of equipment and/or systems shall be provided. The instructions shall include any procedures necessary for placing the equipment and/or system on standby or preparing the equipment and/or system for start up at a later time. Procedures shall include test, manual or normal, and automatic modes.

(4) Normal Operating Conditions. A tabular listing of the Normal operating conditions of each individual component, including the settings, operating temperature, valve conditions, etc.

3.3.7 Maintenance Procedures

Recommended procedures shall indicate preventive maintenance, lubrication, and good housekeeping practices which should be performed by operating personnel as well as more complex maintenance procedures which would normally be performed by trained maintenance personnel only, including instructions for oil filling and drying the oil-filled transformer. The procedures shall be presented with a schedule indicating time frames or operating hours for specific maintenance to be accomplished. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the maintenance procedures and flagged for the attention of personnel. The procedures shall include necessary operating instructions for taking equipment off line, putting equipment on line, or putting equipment on standby. The instructions shall include all necessary material, equipment, and system data to perform maintenance work and shall include, but not be limited to, manufacturers bulletins, catalogs, and descriptive data; certified performance curves, copies of approved test plans, including logs and records of performance acceptance test results, and actual adjustments made during final acceptance and inspection; system layouts, including block diagrams, wiring, control, and isometric diagrams; schematic items within the facility; interrelationships with other items of system; and a list of special tools required.

3.3.8 Repairs

Repair procedures shall be presented with a step-by-step procedure for locating and correcting the trouble. A "shop manual" may be used for this purpose. The procedures shall clearly indicate a major repair activity which should only be performed in a shop or factory versus normal repair work that may be performed onsite or with equipment online. The procedures shall also clearly indicate the limit of repair work that may be performed by Government personnel during the warranty period without voiding warranty provisions. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the repair procedures and flagged for the attention of personnel. Repair procedures shall be keyed to a troubleshooting guide outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.9 Operator Preventive Maintenance, Major Maintenance, and Adjustments

The instructions shall include recommended operator preventive maintenance which would normally be performed by operating personnel and adjustment procedures necessary for normal operation. Schedules shall be provided indicating time frames or operating hours for initiating operator maintenance and adjustments, and including manufacturer's recommended major maintenance requirements. Emergency adjustments shall be included and flagged for operator's attention; the instructions shall also include procedures for emergency repairs that could be performed by operating personnel. These emergency repairs or "trouble-shooting guides" shall be outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

3.3.10 Maintenance Schedule

A separate schedule of all required periodic maintenance shall be included. This schedule shall list by frequency of occurrence all lubricants and special adjustments required. The types and amounts of lubrication must be specified. The Contractor shall verify that the furnished maintenance schedule agrees with the published manufacturer's data.

3.4 ELECTRONIC COPY

One copy of the complete O&M manual shall be furnished in electronic format on a CD ROM. The use of the Adobe Acrobat portable document format (PDF) is acceptable.

3.5 PAYMENT

No separate payment will be made for the preparation and submittal of O&M manuals. Costs incurred by the Contractor in the preparation and submittal of O&M manuals shall be considered as incidental and included in the contract price. Approval and acceptance of the final O&M manuals shall be accomplished before final payment is made to the Contractor.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-09 Manufacturer's Field Reports

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. A “shop drawing” is a Contractor’s or manufacturer’s drawing which provides detail for the manufacturing, delivery, site movement, and assembly of the equipment provided.

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings", as defined, above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error

which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 GENERAL SUBMITTAL REQUIREMENTS

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register, ENG Form 4288, indicating items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project. The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 "Shop Drawings" Procedures

The procedure for "shop drawings" shall be as follows:

(1) "Shop Drawings" Approved by Contractor. All "shop drawings" submittals shall be reviewed and corrected to make them complete and in accordance with the contract. Approval shall be indicated on each drawing by an "Approved" stamp as shown in paragraph 1.14. Names and titles of individuals authorized by the Contractor to approve drawings shall be provided prior to any submission. All shop drawings shall be submitted as indicated herein. Submittals which are not required to be approved by the Government ("information only") will be monitored and spot-checks will be made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for Government approvals.

(2) "Shop Drawings" Approved by the Government. Before submission the Contractor shall review and approve all "shop drawings" prepared by subcontractors, suppliers, and the Contractor for completeness and compliance with plans and specifications, and shall so certify by stamp on each drawing or item of printed material. (Red markings are reserved for the Government.) Suppliers or subcontractors certifications are not acceptable as meeting this requirement. Submittals will be reviewed and processed as follows: NOTE: The following action codes are to further define only the referenced codes on the reverse side of ENG Form 4025.

a. Action Code A (Approved as Submitted). Shop drawings which can be approved without correction will be stamped "Approved" and one reproducible, or two copies of catalog and other printed data, will be returned to the Contractor.

b. Action Code B (Approved, Except as Noted, Resubmission Not Required). Shop drawings which have only minor discrepancies will be corrected and stamped "Approved as Corrected", or "Except as Noted." Corrections will be identified. Distribution will be same as for "Approved" drawings.

c. Action Code C (Approved, Except as Noted, Resubmission Required). Two prints of shop drawings which are incomplete or require more than minor corrections will be marked in red to indicate necessary corrections. One marked copy will be returned to the Contractor stamped "Returned for Correction." Transparencies of such drawings will be destroyed.

d. Action Code E (Disapproved). One print of shop drawings which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections will be returned to the Contractor stamped "Disapproved." An explanation will be furnished on the print or on ENG Form 4025 indicating reason for disapproval. Transparencies of such drawings will be destroyed.

e. Resubmittal. Resubmittal will not be required for drawings with Action Code A or B unless subsequent changes are made by the Contractor or by a contract modification. For drawings with Action Code C or E, corrections required shall be made, any changes shall be noted by dating the revisions to correspond with the change request date, and the drawings shall be promptly resubmitted for review. Government costs incurred after the first resubmittal will be charged to the Contractor.

1.10.2 "Shop Drawings" Submittal

1.10.2.1 General

ENG Form 4025 shall be in three (3) copies used for transmitting "shop drawings" submittals. Each submittal requiring Government approval, five copies; and for information only, three copies, shall be listed separately naming subcontractor, supplier, or manufacturer, specification paragraph number(s), drawing/sheet number(s), pay item number, and any other information needed to identify the item, define its use, and locate it in the work. Each submittal shall be complete containing all information needed to determine contract compliance.

1.10.2.2 Drawings

Each drawing shall be not more than 28 inches high by 40 inches wide, with a title block in lower right hand corner and a 3 by 4 inch clear area adjacent. Title block shall contain subcontractor's or fabricator's name, contract number, description of item(s), bid item number, and a revision block. Unless otherwise specified, two prints of any type, except blueprints, and one electronic drawing file in an approved Computer Aided Design/Drafting (CADD) format discussed in paragraph 1.10.2.3 below shall be submitted. A blank margin of 3/4 inch at bottom, 2 inches at left, and 1/2 inch at top and right shall be provided. Separate drawings are required for each bid item. Computed weight shall be indicated for all items for which payment is based on weight. Where drawings are submitted for assemblies of

more than one piece of equipment or systems of components dependent on each other for compatible characteristics, complete information shall be submitted on all such related components at the same time. The information shall be complete and the sequence of drawing submittal shall be such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, shall consist of complete assembly and detail drawings. All revisions after initial submittal shall be shown by number, date, and subject in revision block. Any drawing or electronic drawing file submitted that is not of satisfactory quality will be returned without action.

1.10.2.3 Final Approved Version of Electrical and Mechanical Shop Drawing

Upon completion of the work under this contract, the Contractor shall submit for review and approval by the Contracting Officer, hard copies (black and white prints) of the final approved versions of the drawings. The drawings shall show all changes and revisions, including any field changes, made up to the time that the work is completed and accepted. The Contractor shall also prepare an index drawing for all Contractor prepared drawings. The index drawing shall include the sheet number, file number, drawing title, and the CADD file name for each drawing. After approval of these drawings, the Contractor shall furnish a complete set of electronic files in Bentley (Intergraph) MicrosStation compatible with Version 8, for all drawings produced by the Contractor in performance of this contract. Electronic files shall be .dgn format with element types that can be edited (i.e. no attached raster files, .dxf, or .dwg file formats will be accepted). Each drawing sheet shall be a separate CADD file. The files shall be submitted on CD ROM's. In addition, the Contractor shall furnish one paper copy of each drawing that is on the CD ROM's. The paper drawings and the files on the CD ROM's shall be identical. All paper drawings submitted to the Contracting Officer shall be no larger than 28 by 40 inches in size.

1.10.3 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.10.4 Other Submittals

All requirements for "shop drawings" under paragraphs 1.10.2.1 and 1.10.2.2 shall apply to catalog cuts, illustrations, printed specifications, or other data submitted except that five copies for Government approval and three copies for information only shall be submitted. Submittals shall be made on 8 1/2- by 11-inch paper or when appropriate as a drawing not larger than 28 inches high by 40 inches wide. Inapplicable portions shall be marked out and applicable items such as model numbers, sizes, and accessories shall be indicated. Decisions on these other submittals will be given in accordance with paragraph Government Approved Submittals.

1.11 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

1.13 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.14 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR
(Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

-- End of Section --

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SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Little Goose 500 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 01010																										
SD-01		1	1.14	Loading Plan				x								x	AO									
SD-01		2	1.18.1	Contractor's Work Supervisor Qualifications					x							x	AO									
SD-01		3	1.24	Access Schemes				x								x	AO									
SD-01		4	1.26	Site Work Schedule				x								x	AO									
SECTION - 01306																										
SD-10		1	1.2	Initial Submittal of O&M Data										x		x	HDC									
SD-10		2	1.2	Final Submittal of O&M Data										x		x	HDC									
SECTION - 01355																										
SD-01		1	1.10.1	Environmental Protection Plan				x								x	AO									
SECTION - 01600																										
SD-01		1	3.3	Transformer Movement Plan				x								x	HDC									
SD-01		2	3.5.1	Site Del Instruction Procedure and Schedule				x								x	HDC									
SD-01		3	3.7	Transformer Shipping Restriction				x								x	HDC									
SD-01		4	3.8.2	Transformer Site Assembly Procedure			x									x	HDC									
SD-06		1	3.8.3	Transformer Oil Field Test Report						x						x	AO									
SD-06		2	3.10	Tran Field Test Report						x						x	AO									
SD-08		1	3.12	Training Outline				x								x	AO									
SD-09		1	3.5.1	Impact Recorder Summary Report						x						x	AO									
SD-09		2	3.5.3	Erecting Engineer's Record									x			x	AO									
SD-09		3	3.11	Site Delivery Inspection Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Little Goose 500 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - 16277																										
SD-02		1	1.4	outline, Assembly, and Detail Drawings		x										x	HDC									
SD-02		2	1.4	Installation Drawings		x										x	HDC									
SD-05		1	1.4	Descriptive Data	x											x	HDC									
SD-05		2	2.1.5.2	Seismic Anchorage Design Calculations	x											x	HDC									
SD-06		1	3.2	Transformer Factory Acceptance Test Report						x						x	HDC									
SD-06		2	3.2.3.1	Bushing Design Tests						x						x	HDC									
SD-06		3	3.2.3.3	Bushing Routine Test Reports						x						x	HDC									
SD-06		4	3.2.3.4	Bushing Current Transformer Test Reports						x						x	HDC									
SD-07		1	2.1.5	Transformer Siesmic Capability Certification							x					x	HDC									
SD-07		2	2.12.1	Transformer Oil Certification							x					x	HDC									
SD-07		3	3.2	Notification of Factory Testing							x						HDC									
SD-08		1	3.2	Factory Test Procedures			x									x	HDC									
SECTION - D																										
SD-07		1	1.2 (2)	Expected Delivery Date Notification				x								x	AO									
SD-07		2	1.2 (5)	Shipping Notices	x											x										
SECTION - E																										
SD-01		1	1.3.2	Quality Control Plan				x								x	HDC									
SD-09		2	1.8	Material Inspection and Receiving Report						x						x	AO									

SUBMITTAL REGISTER

(ER 415 1-10)

CONTACT NO.

TITLE AND LOCATION: Little Goose 500 kV Spare Transformer Supply

CONTRACTOR:

SPECIFICATION SECTION

ACTIVITY NO.	TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
					DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES and PLANS	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O & M MANUALS	INFORMATION ONLY	GOVERNMENT APPROVAL		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.	z.	aa.
SECTION - F																										
SD-07		1	1.6	Project Schedule				x								x	AO									
SECTION - H																										
SD-07		1	1.9	Bill of Materials	x											x	AO									
SD-07		2	1.1	Erecting Engineer's Qualifications					x							x	HDC									

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SECTION 01355

ENVIRONMENTAL PROTECTION

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SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 GENERAL INFORMATION

This section covers preventing environmental pollution and minimizing environmental degradation during, and as a result of, transformer delivery, site movement, assembly and oil filling operations at Libby Dam. Other requirements in the sections may also contain specific requirements for environmental protection. Those specific requirements are in addition to or modify the requirements in this section. The control of environmental pollution requires consideration of sound levels, air and water.

1.2 PUBLICATIONS

1.2.1 APPLICABLE REGULATIONS

All environmental pollution shall be prevented, abated, and controlled and environmental degradation arising from site work activities shall be minimized by complying with all applicable Federal, State, and local laws and regulations, as well as specific requirements of this contract. Where conflicting or duplicate regulations apply, the most stringent requirement shall govern. The Contractor shall comply with the following list of environmental regulations where applicable. This list is not inclusive of all environmental requirements, but represents the Federal regulations most likely to apply to work under this contract.

a. Clean Air Act - 40 CFR 61: Emission Standards for Hazardous Air Pollutants

b. Solid Waste Disposal Act - 40 CFR 241: Land Disposal - 40 CFR 245: Resource Recovery

c. Resource Conservation and Recovery Act - 40 CFR 260-272 : Hazardous Waste Management

d. Comprehensive Environmental Response , Compensation and Liability Act - 40 CFR 300-302: National Oil and Hazardous Substances Contingency Plan for hazardous substance spills and cleanup

e. Clean Water Act - 40 CFR 110-117, 122: Point source discharges into U.S. waters

f. Executive Order 12856 - Federal Compliance Order with the Emergency Planning and Community Right-to-Know Act and the Pollution Prevention Act

g. 49 CFR 100-177, Hazardous materials transportation regulation

1.2.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.62	Safety and Health Regulations for Construction: Lead
33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171-178	Hazardous Materials Regulations

1.3 SUBMITTALS

The following shall be submitted as stated in accordance with SECTION 01330, "SUBMITTAL PROCEDURES":

SD 01 Preconstruction; G HDC

Environmental Protection Plan including proposals for implementing this section for environmental protection with 180 days after Notice to Proceed (NTP) and prior to commencing site work. Included in the Environmental Protection Plan shall be the Spill Control Plan and Contaminant Prevention Plan. If satisfactory, the plan will be approved and one copy will be returned. If unsatisfactory, the plan will be returned for resubmission (see paragraph 1.10, "ENVIRONMENTAL PROTECTION PLAN").

1.4 DEFINITIONS

1.4.1 Environmental Pollution And Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.4.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.4.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents and waste solvents.

1.5 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of site work. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.6 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.7 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.8 NONCOMPLIANCE

An order may be issued stopping all or part of the work for failure to comply with the provisions of this section until corrective action has been taken. No time lost due to such stop orders shall be the subject of a claim for extension of time or for costs or damages unless it is later determined that the Contractor was in compliance.

1.9 ENVIRONMENTAL LITIGATION

1.9.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts of omissions of the Contractor or a subcontractor at any tier not required by the terms of this Contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this Contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this Contract under the terms of Contract Clause SUSPENSION OF WORK. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) as provided in this clause, subject to the provisions thereof.

1.9.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

1.10 ENVIRONMENTAL PROTECTION PLAN

1.10.1 General

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the

Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during sit work. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.10.2 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During site work, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.10.3 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

(1) Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.

(2) Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

(3) Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

(4) Description of the Contractor's environmental protection personnel training program.

(5) A Spill Control plan shall be provided, and shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

(c) Training requirements for Contractor's personnel and methodsof accomplishing the training.

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified. Number required and availability must consider the logistics and time required to begin containment and cleanup of a spill, accessibility, number of remote work areas, number and location of floating plants on the river, etc. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

(f) The methods and procedures to be used for expeditious contaminant cleanup.

(g) The name of the individual who will report any spills and who will follow up with complete documentation.

(h) The 24-hour spill notification telephone numbers including NRC, OERS, County, and local police and/or Emergency Response organization as appropriate and required. The plan shall include 24-hour emergency number for the GQAR, Project Engineer, and Resident Engineer.

(6) A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

1.10.4 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, report forms, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.11 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review,

processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.12 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 IMPLEMENTATION

3.1.1 Planning

No physical work at the site shall be started until an environmental plan has been approved or specific authorization is obtained to start a phase of the work. Preparation and submittal of supplemental plans may be required if additional environmental protection planning is found necessary for later phases of work. As a minimum the plan shall include the sections indicated below:

(1) A contamination-prevention section listing all potentially hazardous petroleum products and toxic materials on the job site and corresponding provisions to be taken to prevent accidental or intentional introduction of such materials into any waterway, the air, or the ground. Section is to include plans for preventing polluted runoff from plant, equipment parking, and maintenance areas from entering local water bodies. MSDS information shall be provided to the project prior to bringing material on-site.

(2) A containment and cleanup section including the procedures, instructions, and reports to be used in the event of an unforeseen oil or chemical spill. This section shall include as a minimum:

(a) The name of the individual who will be responsible for implementing and supervising the containment and cleanup. This person shall be on-site during the handling or disposition of all potentially hazardous materials.

(b) A list of materials and equipment to be immediately available. For all work in or adjacent to water a 60-meter-long minimum containment boom, skimming equipment, and an absorbent cleanup kit shall be available at the job site. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

(c) The names and locations of suppliers of containment materials and names and locations of additional fuel oil recovery, cleanup, restoration, and material placement equipment available in case of an unforeseen spill emergency.

(d) The methods and procedures to be used for expeditious cleanup.

(e) The name of the individual who will report any spills and who will follow up with complete documentation.

3.1.2 Spill Protection

Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, and waste washings from entering public lands or waters. The Contractor shall provide and utilize the following prevention/cleanup materials:

(1) Fuel dispensing vehicles shall carry a fuel containment berm such as Blue Ribbon Environmental (BRE) Tanker Fueling Berm spill kit on board at all times.

(2) Overnight containment berm for all vehicles stored unattended overnight such as BRE Port-A-Berm.

(3) Emergency spill response kit to be available within 15 minutes transport time to equipment performing work such as BRE-PZ-HMR-25G-H.

(4) Emergency spill absorbent matts (10 – 18”x18”) to be carried on board equipment performing work such as BRE-PZ-MT-1818.

(5) Blue Ribbon Environmental’s corporate office phone number is 800-436-1050, or 509-489-1704.

3.1.3 Coordination

Prior to the work a meeting shall be held with the Government to develop mutual understandings relative to the administration of the environmental protection program.

3.1.4 Completion

Before this contract is completed all restoration, cleanup, and other work required to leave the site in an acceptable condition shall have been completed. Final payment will not be made until the environmental protection requirements have been met.

3.2 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

3.3 ENVIRONMENTAL LITIGATION

3.3.1 General

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Government at the request of the Contractor shall determine whether the order is due in any part to the acts or omissions of the Contractor or a subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Government in the administration of this contract. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provision thereof.

3.3.2 Definition

The term "environmental litigation," as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

3.4 HAZARDOUS WASTE

(1) Standards Applicable to Generators of Hazardous Wastes, 40 CFR 262, shall be complied with for the on-site handling and storage of all hazardous waste generated by the project.

(2) Hazardous waste shall not be stored on the ground, near the water or in an area where accidental release of the material can enter waterways. Secondary containment and weatherproof covering shall be used for all storage of hazardous materials or waste.

3.5 DISPOSAL OF HAZARDOUS WASTE

The following shall apply to disposal of any hazardous waste:

(1) The Contractor, where possible, shall use or propose for use materials which may be considered environmentally friendly in that waste from such materials is not regulated as a hazardous waste or is not considered harmful to the environment.

(2) Documentation for analysis, sampling, transportation, and disposal of all hazardous waste streams generated during this contract shall be in accordance with 40 CFR 260-272 and 49 CFR 100-177.

(3) A copy of all hazardous waste determinations, sample results, and shipping manifests shall be furnished to the Government Quality Assurance Representative (GQAR) to verify compliance with Federal, State, and local regulations.

(4) All hazardous wastes shall be removed from the Project for proper disposal within 90 days of waste generation. All hazardous waste shall be packaged, labeled, and marked in accordance with 40 CFR 261 and 40 CFR 262. All hazardous waste shall be stored in accordance with 40 CFR 264.

(5) Certificates of Destruction or Disposal Certificates shall be submitted for all hazardous wastes within 14 days of actual disposal.

(6) The Contractor's Environmental Protection Agency (EPA) identification number shall be used to dispose of all hazardous wastes generated by the Contractor and its subcontractors under this contract. This is construed to mean all hazardous wastes the Contractor or subcontractors generate from materials brought on the site for the purpose of performing work under the terms of the contract.

(7) The Government's EPA identification number shall be used to dispose of all hazardous waste generated from Government-owned facilities on the project. This is construed to mean hazardous wastes generated from the repair, demolition, or removal of any existing materials and buildings from Government facilities and is not intended to include any wastes generated by the Contractor in the performance of its work.

(8) It is the responsibility of the Contractor to prepare all hazardous waste manifests. The Contractor shall prepare manifests for Government signature when the Government's EPA identification number is used. The manifest shall be submitted 48 hours in advance of the waste being removed. The Environmental Compliance Coordinator (ECC) will review and sign the manifest when the transporter arrives.

(9) Hazardous or dangerous waste shall be recycled to the maximum extent possible. Placing hazardous or dangerous waste in a permitted hazardous waste landfill shall be the last resort. If such a facility is necessary, the Contractor shall dispose of it in compliance with Federal, State and local requirements.

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

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SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. IEEE C57.13, "Requirements for Instrument Transformers"). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: http://www.aci-int.org

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: http://www.aashto.org

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
E-mail: info@ansi.org
Internet: http://www.ansi.org/
Note --- Documents beginning with the letter "S" can be ordered from:

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674
E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 Hoes Lane
Piscataway, NJ 08855-1331
Ph: 732-981-0060
Fax: 732-981-1712
E-mail: customer.services@ieee.org
Internet: http://www.ieee.org

INTERNATIONAL CODE COUNCIL (ICC)
5203 Leesburg Pike, Suite 600
Falls Church, VA 22041
Ph: 703-931-4533
Fax: 703-379-1546
E-mail: webmaster@iccsafe.org
Internet: http://www.intlcode.org

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)
127 Park Street, NE
Vienna, VA 22180-4602
Ph: 703-281-6613
Fax: 703-281-6671
E-mail: info@mss-hq.com
Internet: http://www.mss-hq.com

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209
Ph: 703-841-3200
Fax: 703-841-3300
E-mail: webmaster@nema.org
Internet: http://www.nema.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: http://www.nfpa.org

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)
400 Commonwealth Drive
Warrendale, PA 15096-0001
Ph: 724-776-4841
Fax: 724-776-0790
E-mail: sae@sae.org
Internet: http://www.sae.org

UNDERWRITERS LABORATORIES (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096
Ph: 847-272-8800
Fax: 847-272-8129
E-mail: northbrook@us.ul.com
Internet: http://www.ul.com/

U.S. ARMY CORPS OF ENGINEERS (USACE)

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Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

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Internet: http://www.usace.army.mil/publications
or http://www.hnd.usace.army.mil/techinfo/engpubs.htm

U.S. DEPARTMENT OF TRANSPORTATION (DOT)
400 7th Street, SW
Washington, DC 20590
Ph: 202-366-4000
Internet: http://www.dot.gov

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
CODE OF FEDERAL REGULATIONS (CFR)
FEDERAL SPECIFICATIONS (FS)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: http://www.archives.gov

Order documents from:

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Washington, DC 20402-9325
Ph: 866-512-1800 or 202-512-1800
Fax: 202-512-2250
E-mail: gpoinfo@gpo.gov
Internet: http://www.gpo.gov

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

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SECTION 01600

TRANSFORMER SHIPMENT, HAULING AND SITE ASSEMBLY

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section in conjunction with SECTION 16277 covers the Contractor's responsibilities for shipment, hauling, and site assembly of the transformer as required for temporary storage at the Little Goose Dam Powerhouse, field testing, provision of erecting engineer services, and for Contractor-furnished training of Government personnel in the theory, operation, and maintenance of the power transformer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.13	(1993) Requirements for Instrument Transformers

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”:

SD-01 Preconstruction Submittals

1. Transformer Movement Plan; G, AO

A transformer movement plan detailing movement of the transformer from the nearest railhead in Ayer, Washington to its final storage location at the Little Goose Dam powerhouse shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.3, "TRANSFORMER MOVEMENT PLAN").

2. Site Delivery Inspection Procedure and Schedule; G, AO

A transformer site delivery inspection procedure and schedule detailing the step-by-step activity listings and schedule that demonstrates the dependency of one activity on another, shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.5.1, “Site Delivery Inspection Procedure and Schedule”).

3. Transformer Shipping Restriction. G, HDC

The transformer shall not be shipped without written authorization. The site pad must be completed and ready prior to shipping. (see paragraph 3.7)

4. Transformer Site Assembly Procedure; G, HDC

A transformer site assembly procedure detailing the reassembly of the transformer, heated oil filling, interconnections as required for temporary storage, and final field testing shall be submitted for approval not later than 60 calendar days prior to delivery of the transformer (see paragraph 3.8.2, "Transformer Site Assembly Procedure").

SD-06 Test Reports

1. Transformer Oil Field Test Report; G, AO

A transformer oil field test report, showing that the transformer oil meets the requirements of SECTION 16277 (paragraph 2.12.3) prior to filling of the transformer at the Little Goose Dam powerhouse, shall be submitted for approval not later than 48 hours following completion of the tests (see paragraph 3.8.3, "Handling and Installation of Transformer Oil").

2. Transformer Field Test Report; G, AO

A transformer field test report shall be submitted for approval not later than 14 calendar days following completion of the field tests (see paragraph 3.10, "FIELD TESTS").

SD-08 Manufacturer's Instructions

Training Outline; G, AO

A training outline covering the material to be used for performance of the on-site training session, including a schedule, shall be submitted for approval not later than 30 calendar days prior to the completion of the transformer field tests (see paragraph 3.12, "CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL")

SD-09 Manufacturer's Field Reports

1. Impact Recorder Summary Report; G, AO

The impact recorder summary report, including a copy of the impact recorder log, shall be submitted for approval within 24 hours after delivery of the transformer f.o.b. Little Goose Dam powerhouse (see paragraph 3.5.1, "Site Delivery Inspection Procedure and Schedule")

2. Erecting Engineer's Record; G, AO

The transformer manufacturer's erecting engineer's record shall be submitted for approval upon request by the Government, or within 7 calendar days following completion of all site work (see paragraph 3.11, "ERECTING ENGINEER SERVICES").

3. Site Delivery Inspection Report; G, AO

The site delivery inspection report shall be submitted for approval within 48 hours following completion of the site delivery inspection (see paragraph 3.5.3, "Site Delivery Inspection Report")

1.4 POINTS OF CONTACT FOR SHIPPING AND SITE ACCESS

The closest railroad access to the Little Goose Dam Powerhouse is a railroad spur provided by the Union Pacific Railroad. Points of contact for coordinating shipping and site access are as follows:

Union Pacific Rail Road
Contact: Sandy Grubbs
(360) 514-9717

U.S. Army Corps of Engineers
Little Goose Project Site
Facilities Assistant Manager
John Herrell
1001 Little Goose Dam Rd
Dayton, Washington 99328
(509) 399-2233 X253

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 TRANSFORMER SHIPMENT PREPARATION

The transformer equipment, accessories, and spare parts shall be prepared in such manner as to protect them from damage in transit. The Contractor shall be responsible for and make good any and all damages incurred in loading or in transit. It is the Contractor's responsibility to supply units of shipping dimensions and weight that allow for transport from the point of manufacture to the Little Goose Dam powerhouse. Heavy parts shall be securely mounted on skids to facilitate handling. If beams are required to distribute loading on the railcar, their weight and height shall be taken into consideration when determining shipping dimensions and weight, and the beams shall be provided as part of the contract. Any internal blocking or bracing that is to be removed from the transformer at its destination shall be colored bright yellow, and specifically addressed in the Transformer Site Assembly Procedure. Any material to be returned to the vendor after transformer shipment or installation is complete shall be returned at the

Contractor's expense, and shall bear identification of material ownership and shipping address. Materials not so marked will be disposed of at the Government's discretion. All crates containing equipment that should be stored indoors shall be marked "STORE INDOORS" in 2-inch high lettering. For items that are required to be shipped and stored in a particular arrangement such as bushings, shall be marked with "THIS SIDE UP" or similar in 2-inch high lettering. The transformer cooling fans, including associated mounting hardware, shall be packaged and shipped in separate wooden shipping crates for indoor storage at the Government facility.

3.2 SHIPPING

3.2.1 Preparation for Shipment

The transformer shall be delivered without oil. The tank shall be purged, filled with dry nitrogen or dry air (dew point of -50 degrees-C maximum), under a pressure sufficient to ensure that temperature changes encountered in transit will not result in negative pressures, and then sealed. A pressure gauge shall be installed at the gas connection, and a shipping marker shall be attached near the gas connection showing the absolute pressure, type of gas, temperature, and date the tank was sealed. At time of shipment, a dew point test shall be performed on the gas in the transformer. The dew point temperature and the test method used shall be shown on the shipping marker. Transformers shipped by rail shall be shipped on rail cars equipped with hydraulic draft gear, hydraulic snubbing devices, and a 3-axis impact recorder. The impact recorder for the transformer shall be mounted on a plate that is part and parcel to the transformer, located near the bottom center of the transformer, and covered with a shield. The impact recorder shall be inspected before removal for tight securement, in position as loaded, protective cover intact, seals in position, and whether the area the device is secured to is intact, loose, or deformed. Any exceptions to the shipment observed shall be brought to the attention of the COR, and included in the impact recorder summary report, with a copy of the impact recorder log. Mounting provisions for the impact recorder shall be removed after delivery of the transformer.

3.2.2 Impact Recorder

The transformer shall be shipped with a 3-axis digital impact recorder with GPS tracking, such as the Lat-Lon “RoadRider” monitoring and tracking system. The impact recorder shall be mounted on a plate that is part and parcel to the transformer and covered with a shield. The impact recorder shall be inspected before removal for tight securement, in position as loaded, protective cover intact, seals in position, and whether the area the device is secured to is intact, loose, or deformed. Any exceptions to the shipment observed shall be brought to the attention of the COR. The digital impact recorder shall be calibrated to record and transmit impact data greater than 0.75g, and shall also provide timed reports every 4 hours. The impact recorder “real-time” data shall be Internet viewable, and the Contracting Officer shall be provided with the “login” and “password” for site access prior to shipment. Mounting provisions for the impact recorder shall be removed after delivery of the transformer.

3.2.3 Shipment to Little Goose Dam.

After completion of factory testing and the transformer has been released for shipment by the COR, the transformer and ancillary equipment shall be prepared for shipment and transported from the Contractor's manufacturing facility to Little Goose Dam. If transported by rail, the Contractor shall off-load the transformer at the rail siding in Ayer, Washington. At the rail siding, the Contractor shall off-load the transformer on to truck transport and moved to the Little Goose Dam powerhouse.

3.2.4 Shipment of Transformer Oil

The transformer oil shall be shipped to the job-site in suitable tank trucks. The oil shall remain stored in the trucks at the job-site until the transformer is ready to be filled. The cost of providing and returning the oil tank trucks shall be borne by the Contractor, and shall be included in the contract price. The Government will not be responsible for any charges accruing on oil tank trucks due to untimely delivery.

3.3 TRANSFORMER MOVEMENT PLAN

The Contractor shall be responsible for the transport and movement of the transformer to the Little Goose Dam powerhouse. A transformer movement plan shall be submitted for approval, and shall include the following as a minimum. Government approval of the movement plan does not constitute approval by railroad or transportation authorities.

(1) The method and means of lifting and off-loading the transformer from the railcar (if shipped by rail) and onto a transport truck.

(2) Drawings or detailed maps showing the intended route to be taken by the transporter to the Little Goose Dam powerhouse.

(3) Wheel, axle, outrigger, and track loads of the transport truck, as applicable, and their locations along the route. Axle loading and road loading limitations shall be coordinated with the applicable state and county Departments of Transportation.

(4) The method and means of transformer handling and placement into its final storage location at the Little Goose Dam powerhouse, including equipment, loading plans for equipment, and intended route while at the powerhouse.

3.4 HAULING

The dimensions and weight (without oil) of the largest piece of each unit as shipped by the Contractor shall not exceed that allowed for truck transport and for movement at the Little Goose Dam powerplant. In the event the shipping dimensions or weight of the largest piece exceed those allowed for truck transport or within the powerplant, the unit shall be designed such that its weight and dimension can be safely reduced in the field to that allowed for transport. Any limitations affecting transportation shall not become the basis for claims or damages, or for extension of time for completion of work.

3.5 SITE DELIVERY INSPECTIONS

3.5.1 Site Delivery Inspection Procedure and Schedule

A transformer site delivery inspection procedure and schedule shall be submitted, and shall contain a step by step activity listing and a schedule that demonstrates the dependency of one activity on another. Included in the procedure shall be the persons on each shift responsible for superintendence and safe clearance. Activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included in the plan. An Impact Recorder Summary Report shall be submitted within 24 hours after delivery of the transformer.

3.5.2 Sample Site Delivery Inspection Procedure

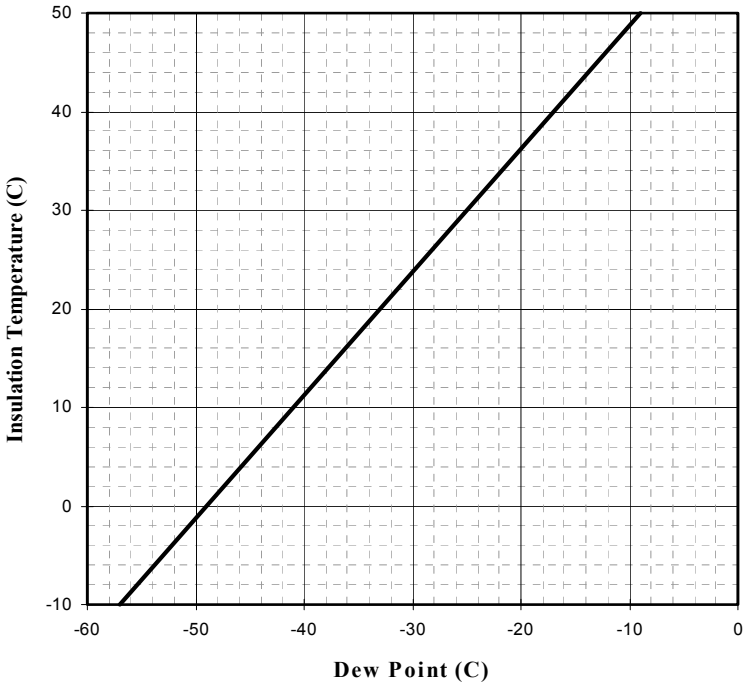
The following outline is based on the expected site delivery inspection and shipping procedure, and is intended to show the scope of the required work. The actual step-by-step procedure submitted shall be applicable to the transformer actually furnished, may differ from the following procedure, and shall list methods of repair and/or retesting if unacceptable results of the inspections are obtained.

(1) Perform an on car external inspection of the transformer and associated equipment for shipping damage, including signs of movement on the transporter, and loose or damaged tie rods.

(2) Check the tank gas pressure by use of a pressure gauge. Tank pressure shall be positive.

(3) Perform a dew point check. The dew point shall not exceed the temperatures for corresponding insulation temperatures, as indicated on the chart below.

DEW POINT LIMITS



(4) Inspect the impact recorder charts in the presence of the COR for any indication of excessive impacts during shipment. If damage due to shipment is suspected, a core insulation test shall be performed. If the transformer fails the core insulation test, recommendations for repair shall be included in the site delivery inspection report.

(5) If shipping damage is suspected, perform an on car internal inspection of the suspect transformer to check for internal damage such as loose coils, broken lead supports, dislodged end insulation, frayed lead insulation, core grounds, or loose nuts or bolts. A temporary cover shall be erected over the transformer, and the manhole covers shall be cleaned before the tank is opened. Prior to performing the internal inspection, the tank shall be purged with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. The duration the inside of the tank is exposed to the atmosphere shall be recorded, and kept to a minimum. Reseal the transformer after the internal inspection has been completed, and repressurize the transformer to 2 psi with dry nitrogen or dry air. Positive pressure shall be maintained during transportation of the transformer to the project, off loading, and until such time that the tank is breached during assembly. An additional dew point check shall be performed 24 hours after reseal of the transformer.

(6) All inspections listed in (1) through (5), above, shall be repeated after the transformer has been trucked to the Little Goose Dam powerhouse.

3.5.3 Site Delivery Inspection Report

After completion of the transformer site delivery inspection, the Contractor shall submit a site delivery inspection report, based upon the approved procedural outline. The site delivery inspection report shall include, but not necessarily be limited to, the following for each transformer shipped:

(1) Gas analysis and pressure.

(2) Visual inspection log.

(3) Core insulation test results (if required).

(4) Proposed method of repair of any damage incurred during shipment.

(5) Procedure for diagnosis and correction in the event of loss of positive gas pressure during shipment.

3.6 TRANSFORMER DRY-OUT

Notwithstanding any differences from the procedures outlined above, the transformer shall be received by the Contractor at the railhead and subsequently transported to the project site for subsequent assembly by the contractor. It is not anticipated that it will be necessary to dry-out the transformer; however, if gas pressure has been lost during shipment or shipping damage is suspected, this dry-out may be necessary. If it becomes necessary to dry-out any part of the transformer, the Contractor shall perform all such operations as required at no additional cost to the Government.

3.7 UNLOADING

The Contractor shall off-load the transformer at rail siding in Ayer, Washinton as noted in paragraph 3.2.3, load it on a truck and move it approximately 30.5 miles, and place it in its permanent storage location which has yet to be determined. In preparation for placement of the transformer by the Contractor, the Government will have prepared a Pad site for the transformer. The transformer shall not be shipped until the government has given written authorization to ship indicating that the permanent storage site is ready for the transformer to be set.

3.8 SITE ASSEMBLY

3.8.1 General

The Contractor shall be responsible for the assembly, oil filling, and interconnections of the transformer as required for temporary storage, and final field testing. All electrical equipment and supplies, machinery parts, and similar equipment necessary to be stored under cover shall be identified and submitted for approval by the COR. The transformer cooling fans shall not be installed on the radiators for long-term transformer storage. The fans and associated mounting hardware shall remain in their shipping crates and turned over to the Government for indoor storage.

3.8.2 Transformer Site Assembly Procedure

A transformer site assembly procedure shall be submitted for approval, which shall include a step-by-step activity listing and a proposed time line for each specific task. Included in the assembly procedure shall be the procedure for heated oil filling of the transformer under vacuum, with a listing of the equipment to be used. Any activities that are hazardous, affect plant operation, or require participation by Government personnel, shall be included. As a minimum, the assembly procedure should include:

(1) Step-by-step assembly of the transformer.

(2) Means for maintaining a slight positive pressure in the transformer tank with the dry nitrogen gas until the start of vacuum filling.

(3) Provide a temporary weather cover over the transformer and purifier. Purge the tank with dry air until analysis of the gas in the transformer indicates at least 19.5 percent oxygen. Remove any interior shipping braces. Install and connect the bushings, and cooling radiators.

(4) Hot oil fill the transformer under vacuum to the normal operating level per the manufacturer's requirements.

(5) Test the CT ratio and polarity in accordance with IEEE C57.13, (paragraphs 6.1.4 and 6.4).

(6) Check the operation of the rapid pressure rise relay.

(7) Pressure test the complete transformer with pressure at the top of the tank at 4 psi for not less than four hours with oil at the normal level in the tank. Check for oil leaks or a reduction in pressure which would signify a gas leak.

(8) Field test the transformer per the requirements of paragraph 3.10, “FIELD TESTS”. All field tests to be performed, including their sequence, method, and acceptance criterion shall be included in the assembly procedure.

3.8.3 Handling and Installation of Transformer Oil

The Contractor will be required to provide a high-vacuum type oil purifier for processing the transformer oil under vacuum and heat during filling of the transformer tank after moved to its temporary storage location, in accordance with the site assembly procedure. After filling with oil, the transformer shall be thoroughly dried by vacuum processing with circulated heated oil per the requirements of the approved transformer site assembly procedure. No Government provided power source will be available to the Contractor for this equipment. The oil supplied under these specifications will be handled from the tank truck to the transformer via the high-vacuum purifier. The oil shall be tested upon arrival to the site prior to filling of the transformer. If the tanker truck has separate oil storage sections, each section containing oil shall be tested. The tests shall comply with the requirements of SECTION 16277 (paragraph 2.11.3, "Chemical, Physical and Electrical Characteristics") and a Transformer Oil Field Test Report shall be submitted for approval prior to filling. Any nonconformance with the

required oil characteristics shall be remedied, at no cost to the Government, by a process submitted for approval. The Contractor shall provide any temporary oil storage facilities required for handling and processing the transformer oil. The Contractor shall submit an oil spill plan and provide the necessary equipment to contain an oil spill, as required in SECTION 01355.

3.9 TOUCH-UP PAINTING

Equipment damaged or abraded in shipment shall be thoroughly cleaned, and the damaged areas shall be given one coat of primer and one finish coat of paint. All finished surfaces to receive primer on which the factory coating has deteriorated or been damaged shall be cleaned by means of solvents, degreasers, light sanding or polishing with 240 grit aluminum oxide paper or cloth moistened with Kerosene, or other approved means which removes all grease, paint markings, dirt, rust, and other foreign substances. Appropriate measures shall be taken to protect adjacent surfaces and equipment from overspray or paint splatter. The use of wet or dry cloths or paper shall be as approved by the COR on an individual basis. Primer paint and finish coats shall be as specified in SECTION 16277 (paragraph 3.3,).

3.10 FIELD TESTS

After the transformer has been filled with oil, the bushings installed, and assembly of the transformer is complete, the Contractor shall, under the supervision of the transformer manufacturer's erecting engineer, perform field tests as approved in the Transformer Site Assembly Procedure. The Contractor shall furnish five certified copies of the Transformer Field Test Report. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The following tests shall be performed on the transformer prior to final acceptance by the Government:

(1) Winding insulation resistance of each winding to ground and between windings (Megger Test).

(2) Power Factor test of each transformer winding.

(3) Transformer Turns Ratio test (TTR) on each tap.

(4) Transformer oil (combustible gas-in-oil).

(5) Power Factor Test of each transformer bushing.

(6) Leakage Reactance Measurement Tests. Leakage reactance measurement tests shall be performed between the high-voltage winding and the low-voltage winding, using the same model test equipment and methods as used in the manufacturing facility. The leakage reactance test results shall not deviate more than 0.5 percent as compared to the factory test reports. Deviations in excess of 0.5 percent shall be explained to the satisfaction of the COR, and may be grounds for requiring an internal inspection of the transformer by the Contractor, at no expense to the Government, to determine the cause.

(7) Sweep Frequency Response Analysis Test. A sweep frequency response analysis (SFRA) test shall be performed, using the same equipment and methods as used during the transformer factory acceptance testing. The proposed SFRA test equipment, setup, and test procedure

shall be included in the field test procedures submittal. The SFRA test results for each unit shall be compared with the factory acceptance test "baseline" results, to determine the integrity of the core and winding structure after shipment from the manufacturing facility. The SFRA data obtained during the factory acceptance testing shall be loaded into the test equipment software to facility wavetrace comparisons. Wavetrace comparisons are expected match closely, with little differences between matched scans. Wavetrace comparisons that do not match closely shall be explained to the satisfaction of the COR, and may be grounds for transformer rejection, requiring an internal inspection of the transformer by the Contractor to determine the cause of the deviations, or requiring the transformer to be sent back to the manufacturing facility for repair at no expense to the Government.

3.11 ERECTING ENGINEER SERVICES

The transformer manufacturer's erecting engineer shall be responsible for the transformer, and for the oversight and correctness of instructions given during the assembly and installation of the transformer in preparation for temporary storage. The erecting engineer shall keep an Erecting Engineer's Record of all data taken during site assembly and installation, and shall submit to the Government one copy either on request or on completion of all site work. The erecting engineer shall be responsible for performance of the following work:

(1) Witness and guide off-loading and loading of the transformer at the rail siding, and off-loading from the transport truck at the Little Goose Dam powerhouse

(2) Witness and guide the hauling of the transformer by truck between the rail siding and the Little Goose Dam powerhouse.

(3) Witness the movement of the transformer at the Little Goose powerhouse into its final storage location.

(4) Witness and guide the assembly of the transformer, including the oil filling process.

(5) Witness and guide the final acceptance testing of the transformer.

(6) Perform training of Government personnel as described, below.

3.12 CONTRACTOR-FURNISHED TRAINING OF GOVERNMENT PERSONNEL

Immediately following placement of the transformer into its temporary storage location and completion of all field tests, the Contractor shall conduct a course at the Little Goose powerhouse in the theory, operation, and maintenance of the power transformer. The actual date in which the training is to be performed shall be coordinated with the Little Goose powerhouse personnel and the COR. The course shall include theory of basic circuits, the transformer system trouble analysis, and operations. Particular attention shall be paid to the accessories listed in SECTION 16277, paragraph 2.8, “ACCESSORIES”. The course shall be of 4 hours minimum duration for approximately 10 Government personnel. Course material shall include the use of site specific Operations and Maintenance Manuals, to the maximum extent possible. The Government may videotape the training session for future use by the Government. The Contractor shall submit a Training

Outline of the material to be covered, and a proposed schedule. In addition to this formal training, the Contractor shall make available during the same day 4 hours of 'one-on-one' training with powerplant personnel, as required.

-- End of Section --

SECTION 16277

CLASS II POWER TRANSFORMER

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SECTION 16277

CLASS II POWER TRANSFORMER

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section covers the supply of one single-phase generator step-up (GSU) power transformer rated 82,000/109,334 kVA, 500 kV GrdY/288.675 kV high-voltage, 13.2 kV – 13.2 kV low-voltage, Class ONAN/ONAF cooling.

1.2 DESCRIPTION OF WORK

The general arrangement of the existing transformer bays and transformer limiting dimensions are as shown on the drawings. All transformer movement and site work performed at Little Goose Power plant shall be witnessed by the manufacturer's erecting engineer, as required in SECTION 01600. The Contractor shall be responsible for the following:

a. Design, manufacture, test, and deliver one single-phase transformer F.O.B. Destination to Little Goose Power plant.

b. Movement of the new single-phase GSU power transformer to the Spare Transformer Pad, and interconnection to the equipment provided to monitor and maintain the transformer in the ready state as specified in SECTION 01600.

c. After movement of the new single-phase GSU power transformer to its Spare Transformer Pad, but prior to interconnection to the Monitoring and maintenance equipment, the Contractor shall reassemble, oil fill, and perform field tests on the transformer as required, herein and as specified in SECTION 01600.

1.3 REFERENCED PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B1.1	(2003) Unified Inch Screw Threads (UN and UNR Thread Form)
ASME B1.20.1	(1983; R 2001) Pipe Threads, General Purpose (Inch)
ASME B16.1	(1998) Cast Iron Pipe Flanges and Flanged Fittings
ASME B16.24	(2001) Cast Copper Alloy Pipe Flanges and Flanged Fittings Class 150, 300, 400, 600, 900, 1500, and 2500

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(2004) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 343	(1999) Standard Test Method for Alternating-Current Magnetic Properties of Materials at Power Frequencies Using Wattmeter-Ammeter-Voltmeter Method and 25-cm Epstein Test Frame

ASTM A 718	(1991) Standard Test Method for Surface Insulation Resistivity of Multi-Strip Specimens
ASTM D 923	(1997) Standard Test Method of Sampling Electrical Insulating Liquids
ASTM D 1533	(2000) Standard Test Method for Water in Insulating Liquids (Karl Fischer Reaction Method)
ASTM D 3487	(2000) Standard Specification for Mineral Insulating Oil Used in Electrical Apparatus
ASTM D 4059	(2000) Standard Test Method for Analysis of Polychlorinated Biphenyls in Insulating Liquids by Gas Chromatography

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1	(2000) Standard for Welding Procedure and Performance Qualification

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2003) International Building Code

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C57.12.00	(2000) Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating transformers
IEEE C57.12.70	(2000) Standard Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.12.80	(2002) Standard Terminology for Power and Distribution Transformers
IEEE C57.12.90	(1999) Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.13	(1993) Standard Requirements for Instrument Transformers
IEEE C57.19.00	(1991; R.1997)) General Requirements and Test Procedure for Outdoor Power Apparatus Bushings
IEEE C57.19.01	(2000) Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings
IEEE 693	(1997) IEEE Recommended Practice for Seismic Design of Substations.

MANUFACTURERS STANDARDIZATION SOCIETY (MSS)

MSS SP 70	(1998) Cast Iron Gate Valves, Flanged and Threaded Ends
MSS SP 80	(2003) Bronze Gate, Globe, Angle, and Check Valves

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA AB 3	(2001) Molded Case Circuit Breakers and Their Application

NEMA C57.12.10	(1997) Transformers – 230 kV and Below, 833/958 Through 8333/10,417 kVA Single-Phase, and 750/862 Through 60,000/80,000/100,000 kVA Three-Phase Without Load Tap Changing, and 3750/4687 Through 60,000/80,000/100,000 kVA with Load Tap Changing Safety Requirements
NEMA C80.1	(1994) Rigid Steel Conduit, Zinc Coated
NEMA FB 1	(2003) Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies; Revision No. 1
NEMA ICS 2	(2000) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated Not More Than 2000 Volts AC or 750 Volts DC
NEMA SG 4	(2000) Alternating-Current High-Voltage Circuit Breakers
NEMA WC 70	(1999) Standard for Nonshielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy

UNDERWRITERS LABORATORY (UL)

UL 1	(2000) Flexible Metal Conduit, Tenth Edition
UL 467	(2004) Grounding and Bonding Equipment
UL 514B	(2004) Conduit, Tubing, and Cable Fittings
UL 886	(1994) Safety for Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
UL 1008	(1996; Rev thru Aug 2003) Transfer Switch Equipment

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.502	(2000) Fall Protection Systems Criteria and Practices

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. The following shall be submitted in accordance with SECTION 01330, “SUBMITTAL PROCEDURES”, unless otherwise indicated below:

SD-02 Shop Drawings

1. Outline, Assembly and Detail Drawings; G, HDC

Outline, assembly and detail drawings of all equipment to be furnished under the contract, together with final weights of the equipment and overall dimensions, shall be submitted for approval within 90 calendar days after date of award to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. These drawings shall include the following, at a minimum:

a. Transformer nameplate information.

b. Overall dimensions and layout of the assembled transformer, including structural supporting base, jacking locations, lifting locations, pulling-eye locations, conservator tank, seismic anchoring, and clearances required for untanking or disassembling the transformer, details of gasketed joints, and welded joint details.

c. Locations of all bushings and ancillary equipment including current transformers, valves, devices, gauges, relays, terminal cabinets, radiators and fans, conduit, junction boxes, and automatic transfer switch.

d. Transformer winding configuration diagrams.

e. Schematic and wiring diagrams, and connection diagrams showing terminal block and conductor designations shall be made as seen by an observer of the actual equipment arrangement. Space shall be provided for addition of devices where mounting space exists on the structure.

2. Installation Drawings; G, HDC

Installation drawings as required for the installation of the transformer shall be submitted for approval within 120 calendar days after contract award. Included in these drawings shall be the proposed seismic anchorage system. (see paragraphs 2.1.4.2, "Seismic Anchorage Design").

SD-05 Design Data

1. Descriptive Data; G, HDC

Descriptive data or catalog data of all accessory devices and ancillary equipment provided with the transformer shall be submitted for approval within 90 calendar days after date of award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications.

2. Seismic Anchorage Design Calculations; G, HDC

Design calculations performed and stamped by a qualified civil or structural engineer with professional registration, demonstrating conformance of the transformer seismic anchorage design with the specification requirements shall be submitted for approval within 90 days after date of contract award. (see paragraph 2.1.4.2, “Seismic Anchorage Design.)

SD-06 Test Reports

1. Transformer Factory Acceptance Test Report; G, HDC

The transformer factory acceptance test report shall be submitted for approval not later than 30 calendar days following completion of the factory acceptance tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

2. Bushing Design Tests; G, HDC

The transformer bushing design test reports shall be submitted for approval not later than 30 calendar days following completion of the tests (see paragraph 3.2.3.1, "Bushing Design Tests"). If certified copies of previously conducted bushing design tests are submitted in-lieu of new test results, they shall be submitted not later than 180 calendar days prior to delivery of the transformer.

3. Bushing Routine Tests; G, HDC

The transformer bushing routine test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.3.3, "Bushing Routine Tests").

4. Bushing Current Transformer Tests; G, HDC

The transformer bushing current transformer test reports shall be submitted for approval not later than 30 calendar days following completion of the tests. (see paragraph 3.2.3.4, "Bushing Current Transformer Tests").

SD-07 Certificates

1. Transformer Seismic Capability Certification; G, HDC

The transformer seismic capability certification, supported by testing or analysis, shall be submitted for approval within 90 days after date of contract award, to demonstrate fully that all parts of the equipment will conform to the requirements and intent of the specifications. (see paragraph 2.1.4, “Seismic Requirements”)

2. Transformer Oil Certification; G, HDC

Transformer oil certification shall be submitted for approval a minimum of 14 calendar days prior to the start of factory tests. (see paragraph 2.11.1, "Quantity and Transformer Oil Certification").

3. Notification of the Date of Factory Tests; G, HDC

The contractor shall notify the COR, in writing, 21 calendar days in advance of when the transformer will be ready for factory acceptance tests, so that the tests may be witnessed by a Government Representative. If factory testing in a foreign country is proposed, the Contractor shall notify the COR in writing of the preliminary testing dates, not later than 60 days prior to the start of factory tests. (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS").

SD-08 Manufacturer's Instructions

1. Factory Test Procedures; G, HDC

The transformer factory test procedures shall be submitted for approval not later than 60 calendar days prior to the start of the factory acceptance tests (see paragraph 3.2, "FACTORY ASSEMBLY AND TESTS")

PART 2 PRODUCTS

2.1 TYPE AND RATING

2.1.1 General

The transformer to be furnished under these specifications shall be single-phase, three winding oil-immersed type suitable for outdoor operation. The transformer shall be self-cooled/forced air-cooled type, Class ONAN/ONAF, and shall be of a design that has an established record of satisfactory operation with the type of oil preservation system specified. The dimensions of the transformer shall not exceed the limits shown on the drawings.

2.1.2 Transformer Limiting Dimensions and Equipment Arrangement

The transformer design, configuration, dimensions, and interconnections shall be the same as the existing Westinghouse GSU transformer, as indicated on the Westinghouse Electric reference drawings EBM1257-01 and EBM1257-02, facilitating the future installation of the transformer as a spare in the existing transformer vaults with a minimum of field modifications. The dimensions of the transformer shall not exceed the dimensions of the existing transformer, as shown on the reference drawings. Particular attention shall be paid to the following to assure correct interface with the Little Goose, Lower Monumental, and Lower Granite Powerplants:

(1) Low-voltage bushing throat connections. The location, dimensions, and flanges of the low-voltage bushing throats shall be the same as the existing transformer to assure proper interconnection with the existing isolated-phase bus.

(2) High-voltage and high-voltage neutral bushings. The position and location of the terminals of the high-voltage and high-voltage neutral bushings shall be the same as the existing transformer to assure proper interconnection with the existing terminal connectors.

(3) Control cabinet. The location and position of the transformer control cabinet shall be the same as the existing transformer to assure proper alignment directly above the existing embedded conduit, and allow for proper interconnection.

(4) Structural supporting base. The structural supporting base of the transformer shall allow for placement on the existing transformer pads, as indicated.

2.1.3 Requirements

Except as otherwise specified herein, the transformer, accessories, and spare parts shall conform to the applicable requirements of IEEE C57.12.00, IEEE C57.12.70, C57.12.80 and C57.12.90; and NEMA C57.12.10. Although the rating of the transformer exceeds the rating governed by NEMA C57.12.10, specific requirements included herein referencing NEMA C57.12.10 shall be met.

2.1.4 Ratings and Electrical Characteristics

The ratings and electrical characteristics of the single-phase transformer shall be as follows:

DESCRIPTION	**500 kV TRANS RATINGS**
Continuous ratings, at 65oC, of the high-voltage winding (H) of all taps, kVA	
a. ONAN Rating	82,000
b. ONAF Rating	109,334
Continuous ratings, at 65oC, of each half of the low-voltage windings (X and Y), kVA	
a. ONAN Rating	41,000
b. ONAF Rating	54,667
Frequency	60 Hz
Number of phases	1
Rated voltage, kV	
a. High-voltage winding	500GrdY/288.675
b. Each half of the low-voltage winding	13.2
Winding Connections (external to the transformer)	
a. High-voltage winding	Grounded-Wye
b. Low-voltage winding	Delta
Impedance, percent (at ONAN rated current, subject to the requirements of paragraph 2.1.5.)	
a. At ONAN rated current between the high-voltage winding (H) and the low-voltage winding (X), 41,000 kVA base	9.4
b. At ONAN rated current, between the high-voltage winding (H) and the low-voltage winding (Y), 41,000 kVA base	9.4
c. At ONAN rated current, between the two halves of the low-voltage winding (X and Y), 41,000 kVA base,	21
Polarity	Subtractive
Basic Impulse Insulation Levels (BIL)	
a. Line ends of the high-voltage windings, not less than	1425 kV
b. Neutral ends of the high-voltage windings, not less than	150 kV
c. Low-voltage windings, not less than	110 kV
Winding Taps	
a. Taps in low-voltage windings	None
b. Taps (full capacity) in high-voltage windings	
1) Tap '1' (percent of high-voltage rating)	107.5
2) Tap '2' (percent of high-voltage rating)	105.0
3) Tap '3' (percent of high-voltage rating)	102.5
4) Tap '4' (percent of high-voltage rating)	100.0
5) Tap '5' (percent of high-voltage rating)	97.5
Efficiency, percent	
Minimum efficiency at ONAN rated kVA and 1.0 power factor, with both halves of the 13.2 kV winding equally loaded	99.65
Audible Sound Level, dB	
Maximum average sound level at rated voltage and frequency, with all cooling fans in operation, as measured in accordance with paragraph 3.2.2.e.	74
Weight, pounds	
Maximum transformer total weight, completely assembled and oil-filled with all accessories installed	352,000

2.1.5 Seismic requirements.

2.1.5.1 Seismic Requirements for Equipment

The transformer to be furnished under this contract shall be constructed and assembled to withstand the maximum seismic forces specified. Contractor shall provide certification supported by testing or analysis stating the seismic capability of the equipment.

2.1.5.2 Seismic Anchorage Design

The seismic anchorage for the 500 kV GSU Transformer shall be designed by the Contractor in accordance with the requirements of this specification. Contractor shall provide anchorage design calculations performed and stamped by a qualified civil or structural engineer with professional registration. Anchorage shall be designed without relying on effects of friction and shall provide a factor of safety of 1.3 against overturning. Anchorage design for the Lower Snake spare transformer shall be designed to accommodate ± 1/2inch lateral movement transverse to and parallel with the skid support and be rigidly attached to one skid support. Existing concrete strength shall be taken as f'c = 3,000 psi. Contractor shall provide recommended anchorage details, including anchorage locations, maximum tension and shear per anchor bolt, and anchor bolt specifications. Detail drawings shall be stamped by the engineer performing the calculations. Support details shall be compatible with a skid mount design as shown in reference drawings LMP-1.8-4-2/24, LGP-1.9-4-2/24 and GDP-1-4-2/39.

2.1.5.3 Seismic Code Requirements

The seismic design shall be in accordance with Section 1621 Architectural, Mechanical and Electrical Component Seismic Design Requirements of ICC IBC or the provisions in 1997 IEEE 693 Annex D, whichever produces the more adverse seismic effects. For ICC IBC, use Seismic Use Group III, spectral acceleration S_{DS} = 0.3053, I_P = 1.50, and z=h=1. For IEEE 693, the seismic qualification level shall be moderate.

2.1.6 Impedance Tolerance

The impedance tolerance shall be limited to a maximum of 3 percent, at the 100% ONAN rated current, to reduce circulating current when installed as a spare in the existing transformer bank.

2.2 THERMAL DESIGN

The temperature rise above ambient temperature of the transformer or parts thereof, when tested in accordance with its ratings, shall not exceed the limits of observable temperature rise for oil-immersed apparatus as stated in IEEE C57.12.00 (paragraph 5.11.1). The winding temperature rise by resistance shall not exceed 65 °C, and the hottest-spot winding temperature rise shall not exceed 80 °C on the tap connections that give the highest losses, with all coolers in operation.

2.3 CORE

The transformer core shall be constructed of high quality, non-aging, cold-rolled, grain-oriented steel especially suitable for the purpose. The core steel laminations shall not exceed 0.011 inch in thickness, and shall be M3 grade equivalent, or better. The use of paper insulation in the core will not be acceptable. Electrical core steel core loss, rms exciting power, rms and peak exciting current, and ac permeability shall be tested in accordance with ASTM Standard A 343. Each roll of sheet steel used shall have the surface insulation resistivity tested in accordance with ASTM Standard A 718. The core shall be carefully assembled and rigidly clamped to insure adequate

mechanical strength to support the windings and to prevent shifting of the laminations during shipment, and also to reduce vibration to a minimum under operating conditions. Core joints shall be interleaved. An external bushing for core grounding shall be provided and be provided with a removable strap between the bushing terminal and the tank wall. The bushing shall be rated for not less than 5 kV and shall be located and labeled to avoid confusion with other bushings. The bushing shall be protected with a removable weatherproof metal cover. The transformer core design and construction methods shall be in such a manner to assure that the average sound level due to operation of the transformer and accessories will not exceed 74 dB at rated voltage and frequency as measured in accordance with IEEE C57.12.90.

2.4 WINDINGS

2.4.1 General

The transformer shall be manufactured with three windings meeting the requirements of paragraph 2.1.4, consisting of one high-voltage winding (H) and dual 13.2 kV low-voltage windings (X and Y). The winding conductors shall be of copper and shall be of a circular coil construction. Consideration shall be given to all factors of service, such as high dielectric and mechanical strength of insulation, coil characteristics, and minimum restrictions to free circulation of oil. Coils shall be made up, shaped, and braced to provide for expansion, contraction, and shrinkage due to temperature changes and aging in service in order to avoid abrasion of insulation and to provide resistance to movement and distortion caused by abnormal operating conditions. Adequate barriers shall be provided between windings and core and between high-voltage and low-voltage windings. End coils shall have additional protection, if required, against normal line disturbances.

2.4.2 Insulation Levels

The transformer shall be designed for BIL of the windings as specified in paragraph 2.1.4 and shall be capable of withstanding IEEE Standard dielectric tests, in accordance with paragraph 3.2.2, corresponding to the specified winding insulation levels.

2.4.3 Short Circuit Capability

The transformer shall be capable of withstanding without injury the mechanical and thermal stresses caused by short circuits on the external terminals of any winding or windings, with rated voltages maintained across the terminals of all other windings intended for connection to sources of energy, under the conditions listed in IEEE C57.12.00 (paragraph 7.1.1).

2.5 NO-LOAD TAP CHANGER

The transformer shall be equipped with an external, manually-operated tap changer for changing connections to the taps in the high-voltage windings. Taps will be changed only when the transformer is de-energized. The tap changer control shall be mounted on the transformer tank at approximately 48 inches above the base of the transformer and shall include an operating hand wheel, indicating pointer and dial, and means for locking the tap changer in any desired tap position. The operating hand wheel, if removable, shall be mechanically interlocked with the tap mechanism to prevent its removal when the mechanism is not in a completed tap position. Transmission of motion from operating hand wheel shaft to taps shall be by interaction of rigid members. The contacts shall be capable of withstanding the full short-circuit current of the transformer without injury. The tap changing mechanism shall render it impossible to leave a winding open or short-circuited when the operating wheel is placed in a locked position.

2.6 TANK

2.6.1 Construction

The transformer shall be provided with an oil-tight steel tank, with an oil-tight cover per the requirements of NEMA C57.12.10 (paragraph 5.8). The tank shall be provided with one or more unobstructed manholes in the cover with minimum dimensions of 24 inches by 24 inches, or 24 inches minimum diameter, to afford easy access to the lower ends of bushings, terminals, and the upper portions of the coils. In addition to these manhole covers, a separate manhole cover of 12 inches minimum diameter shall be provided that has an unobstructed “line-of-sight” to the inside bottom of the tank, for future use in ultrasonic oil level monitoring. Suitable guides shall be provided for guiding the cores and windings as they are being removed from or lowered into the tank or for guiding the top section of the tank as it is removed or lowered over the core and coils. The main transformer tank and any attached compartment that is subjected to operating pressures shall be designed and constructed to withstand, without leakage or permanent deformation, an internal pressure not less than 10 psi. The tanks shall be designed and constructed for vacuum filling (essentially full vacuum) in the field. All valves, fittings and piping affected by vacuum filling shall be of correct design and construction for such filling. Auxiliary compartments such as reservoir tanks, when not designed for vacuum filling, shall be so designated, and suitable isolating valves shall be provided. The joints between the tank and cover, and between tank sections shall be welded, and the design of the joint shall prevent weld splatter from entering the inside of the tank. The Contractor shall submit for approval full information covering details of welded joints.

2.6.2 Gasketing

Gaskets between metal surfaces shall be set in grooves or held in position by retainers so arranged that all parts are metal to metal. The gaskets shall be made of a resilient material that will not deteriorate under the action of hot oil and will remain oil-tight. Nitrile and cork-neoprene gaskets are acceptable. Gaskets of cork or neoprene only will not be allowed. Details of proposed gaskets shall be furnished.

2.6.3 Lifting and Moving Facilities

2.6.3.1 Lifting Facilities

Design loads for lifting eyes, lugs, or hooks shall be two times the actual load to allow for possible unequal lifting forces. Safety factor for lifting eyes, lugs, or hooks (using design loads) shall be in accordance with NEMA C57.12.10 (paragraph 5.3.1). Lifting eyes, lugs, or hooks shall positively keep the lifting cable in place even when the cable is slack. The transformer shall be provided with the following lifting facilities:

(1) Lifting attachments on the tank cover.

(2) Adequate means for lifting the core and coil assembly from the tank.

(3) Lifting lugs or hooks on the tank adequate for lifting the complete transformer, including radiators, filled with oil.

2.6.3.2 Moving Facilities

Moving features shall be furnished as required for moving the transformer to its final operating location as shown, and shall be in accordance with NEMA C57.12.10 (paragraph 5.3.3).

2.6.4 Valves

The transformer shall be provided with suitable valves, conforming with NEMA C57.12.10 (paragraph 5.1.5), except as noted below, for use in filling, draining, and maintaining the transformer and cooling equipment. All oil valves shall be designed for use with insulating oil and shall hold hot oil without leaking. Threaded connections between the valves and the tank will not be allowed. Valves shall conform to MSS SP 70, Type I or II, Class I; or MSS SP 80, Type II, Class A, whichever applicable. All valves shall be brass or bronze, and flanged. Valves shall be provided for the following:

(1) Upper filter connection. A 2-inch globe type valve shall be located such that it can be used to fill the transformer with oil while the transformer is under vacuum.

(2) Vacuum pump connection. A 3-inch globe type valve shall be located on the tank cover for use in connecting a vacuum pump during the vacuum filling process.

(3) Main drain. A 3-inch globe type valve shall be located at the extreme bottom of the tank for use in gravity draining of the transformer, and shall be connected to the powerplant transformer oil drain piping.

(4) Oil sampling valve. Sampling the oil from the extreme bottom of the tank. The sampling valve shall be ball type, with a threaded cap or plug on the discharge end. This valve may be located at the main drain valve location.

(5) Lower filter connection. A 2-inch globe type valve shall be located at the extreme bottom of the tank.

(6) Tank air vents. Valves shall be provided for venting of the bushing adapters.

(7) Isolation valves. The following isolation valves shall be provided:

(a) Radiators. Valves shall be provided on the tank at the inlet and outlet of each radiator to permit removal without draining the oil from the tank.

(b) Conservator tank. Valves shall be provided for isolation of the conservator tank from the main transformer tank, and for complete gravity draining of the conservator tank oil reservoir.

(c) Rapid pressure rise relay. Isolating the rapid pressure rise relay.

2.6.5 Connections

All bolts, studs, machine screws, nuts, and tapped holes designed for customer connection shall be in accordance with ASME B1.1. Threads for sizes 1/4-inch to 1-inch, inclusive, shall be NC or UN series. The sizes and threads of all valves, pipe and fittings, conduit and fittings, tubing and fittings, and connecting equipment, shall be in accordance with ASME B1.20.1. Manufacturers' standard threads and construction may be used on small items, which in the opinion of the COR are integrally replaceable, except that threads for external connections to these items shall meet the above requirements.

2.6.6 Steel Pipe and Fittings

Steel pipe shall conform to ASTM A 53, Weight A, Class 2. Dimensions of terminating flanges shall conform to ASME B16.1 and B16.24.

2.6.7 Grounding

Two ground pads shall be provided on the transformer for grounding the tank and base. The locations of the existing transformer ground pad connections are as indicated on the drawings. The grounding provisions shall be in accordance with NEMA C57.12.10 (paragraph 5.5).

2.6.8 Personal Fall Arrest System

The top of the transformer tank shall be covered with a non-slip material, the same color as the tank walls. A fall protection system, consisting of removable safety posts and railing or wire rope, shall be provided. The post mounting shall be designed so as to not collect water. The fall protection system shall be designed to meet the applicable provisions of 29 CFR 1926.502.

2.7 BASE

2.7.1 Steel Supporting Base

The transformer shall be provided with a structural steel supporting base designed for pad mounting without wheels. The structural steel supporting base framework shall be designed so that the centerline of the transformer main drain valve located at the extreme bottom of the tank is located approximately 12-inches above the concrete deck. The transformer structural steel supporting base shall be sized so that it does not span any existing concrete deck expansion joint, as indicated. The base shall be suitable for moving the transformer on rollers or skids when completely assembled and filled with oil, and shall be designed to permit moving the transformer in a direction parallel to either centerline, with suitable pulling eyes provided.

2.7.2 Jack Ports

The transformer base shall be provided with jack ports, bosses, or lugs, to permit jacking the complete transformer filled with oil per the requirements of NEMA C57.12.10 (paragraph 5.3.4), using the hydraulic jacks specified in paragraph 2.18.1, “Jacks”. The design loads for jacking bosses or lugs shall be at least two times the actual loads to allow for possible unequal jacking forces.

2.7.3 Center of Gravity

The base shall be so designed that the center of gravity of the transformer, with or without oil as normally prepared for shipment, will not fall outside the base support members for a tilt of the base of 15 degrees from the horizontal.

2.8 ACCESSORIES

2.8.1 General

Dials, indicators, and gages installed on the transformer shall be mounted on the high-voltage side at a height of approximately 60 inches above the base of the transformer, unless otherwise indicated, and arranged for convenient reading standing at the level of the base. The following accessory devices shall be furnished, and shall be included in the price for the transformer. Accessories shall be provided per the requirements of NEMA C57.12.10 (paragraph 5), unless otherwise indicated.

2.8.2 Liquid Level Indicator

The transformer constant-pressure, reservoir tank shall be provided with a magnetic-type liquid level indicator located on the side of the reservoir

tank facing the transformer vault opening, equipped with a circuit-closing low-level alarm contact suitable for use with an ungrounded 125 Vdc circuit. The dial shall be marked to show the 25 degrees-C oil level and the maximum and minimum oil levels.

2.8.3 Liquid temperature indicator

The transformer shall be provided with a dial-type indicating thermometer (liquid temperature indicator) with its sensing element located in the path of the hottest oil. The Thermowell shall include a heating element for use in future oil temperature rise testing. The heating element leads shall be brought down to the transformer control cabinet and terminated on a terminal block. Information shall be included in the Operations and Maintenance Manual regarding the rating of this heating element. The thermometer dials shall cover a range of 0 to 120 degrees-C and shall be equipped with adjustable circuit-closing alarm contacts suitable for use with an ungrounded 125 Vdc circuit.

2.8.4 Winding Temperature Indicator

2.8.4.1 General

One winding temperature indicator (WTI), with associated equipment, for use in remote indication and recording or logging of the temperatures of the transformer phase windings, and for switching in the cooling control circuits, shall be provided for each low-voltage winding. The WTI equipment shall be responsive to the current in the phase winding and to the top oil temperature, shall reflect the approximate hot-spot temperature of the winding, and shall be provided with a means of calibration. The WTI equipment shall include the following:

(1) A current transformer installed in each of the low voltage windings, supplying current proportional to the load.

(2) A closed thermowell located inside the transformer case located in the hottest oil near the top of the tank.

(3) A heating coil in the thermowell energized by the current transformer.

(4) A sensing element located in the thermowell for operation of a dial indicator and four switches.

(5) A resistance temperature detector (RTD) for remote indication of winding temperature.

(6) All necessary wiring and capillary tubing.

2.8.4.2 Dial Indicator and Switches

Each WTI shall have three electrically-independent, self-resetting contacts suitable for use on 125 Vdc ungrounded circuits. The contacts shall operate to provide stages of cooling, annunciation and control actions as indicated in paragraph 2.13.4.

2.8.4.3 Resistance Temperature Detectors

The WTI equipment shall include two ungrounded three-wire 100 ohm platinum resistance temperature detectors, which will be used to existing remote temperature recording or logging instruments. The leads from the WTI equipment shall be brought out through the transformer tank in watertight and oil tight conduit fittings. All leads from the WTI equipment shall terminate in the transformer control cabinet. The connecting leads between the RTD elements and control cabinet terminal blocks shall be soldered.

2.8.5 Rapid Pressure Rise Relay

The transformer shall be provided with a relay to detect a sudden rise in oil or gas pressure in the transformer tank, designed to operate on rate of pressure change. The relay shall be insensitive to pressure pulses caused by electrical disturbances such as magnetizing inrush currents or mechanical shocks, but highly sensitive to small arcs which would not ordinarily cause a pressure relief device to operate. Connection to the transformer oil space shall be made through an approved valve. The relay shall have at least one set of 'Form C' contacts suitable for use on a 125 Vdc ungrounded circuit. A seal-in relay suitable for service on a 125V ungrounded DC source shall be provided with the rapid pressure rise relay for use in latching the output relay for initiating a transformer trip. Means shall be provided to manually actuate the sensing mechanism of the relay without exposing the oil to air or gas, draining any oil from the transformer, or injecting any gas or liquid into the oil system.

2.8.6 Pressure Relief Device

2.8.6.1 General

The transformer tank shall be provided with a self-resetting, mechanical-type high-flow pressure relief device to automatically relieve internal pressure and to protect the tank against rupture due to arcing below the surface of the oil. The relief device shall be capable of withstanding full vacuum without rupture or loss of accuracy. This device shall be constructed to minimize oil discharge during operation, and to exclude air and water after it opens. It shall be mounted over the main tank at or above the normal oil level in the tank. It shall be equipped with a visual indicator and an alarm contact suitable for operation on a 125 VDC ungrounded circuit. The pressure relief device shall be a Qualitrol XPRD, or approved equal.

2.8.6.2 Oil Discharge Piping

Oil discharge piping shall be provided for directing the oil discharged from the pressure relief device to the base of the transformer tank. The oil discharge piping outlet shall be positioned approximately 24-inches above the base of the transformer, and be provided with a screen to discourage entry by animals, birds, and insects. The design of the oil discharge piping, including screen and inspection cover details, shall be included in the manufacturer's shop drawings.

2.8.7 Gas and Oil Actuated Relay (Buchholz)

The transformer shall be provided with a gas and oil actuated relay (Buchholz relay) located in the pipe connecting the transformer tank to the constant-pressure, reservoir tank. Pipe-work shall be so arranged that all gas arising from the transformer shall pass into the relay, and the size and arrangement of pipe-work shall conform with the recommendations of the relay manufacturer. The relay shall have the following features:

(1) The relay shall be manufactured of a corrosion-resistant, oil-tight alloy casting, have flanged housing connections, and shall have graduated inspection glass windows that enable the volume of gas and the contact system to be inspected.

(2) Two floats (one for gas accumulation and one for low oil level) and one flap with counterbalance weight for the detection of oil speed.

(3) A push-button for testing the relay electric circuits.

(4) A pneumatic test device

(5) A gas and oil sampling device shall be provided, and mounted on the high-voltage side of the transformer at a height of approximately 48 inches above the base of the transformer.

(6) The relay shall have independent alarm contacts wired back to the transformer control cabinet that close on collection of gas or at low oil level, and tripping contacts that close following an oil surge. Mercury-based contacts will not be acceptable. The normally-open, electrically separate alarm and tripping contacts shall not be exposed to oil, and shall have a rated nominal current of 2A a.c./d.c. and a rated nominal voltage of 240V a.c./d.c.

(7) Operation of the relay shall be immune to seismic disturbances.

2.8.8 Contacts and Devices

The contacts of all relays, gages, and thermometers shall be insulated from ground and shall be of a positive snap-action type. Separate alarm relay devices may be furnished if desired. Alarm contacts shall be suitable for operation on 125 Vdc ungrounded circuits and rated 0.5 amperes (resistive) at 125 Vdc

2.9 BUSHINGS

2.9.1 General Bushing Requirements

The transformer shall have one high-voltage, four low-voltage, and one neutral leads brought out from the tank through bushings as specified below. Bushings of the same voltage and current rating shall be interchangeable and, as applicable, except for the core ground bushing (see paragraph 2.3), conform to IEEE C57.19.00 and C57.19.01. All bushings shall meet the following requirements:

(1) Bushings shall be of recent manufacture and shall be of a type and style currently manufactured by the bushing manufacturer and shall be dimensionally interchangeable with current models of at least one United States manufacturer.

(2) Bushings shall be designed for outdoor service.

(3) The porcelain used in the bushings shall be manufactured by the wet process and shall be homogeneous, free from laminations, cavities or other flaws affecting its mechanical strength or dielectric quality, and shall be well vitrified, tough and impervious to moisture. The glazing of the porcelain parts shall be free from imperfections, such as blisters and burns. The exterior porcelain shell above the mounting flange shall be light grey in color.

(4) Bushings shall be so designed that there will be no stressing of any parts due to temperature changes, and adequate means shall be provided to accommodate conductor expansion.

(5) Bushings shall be gastight and oiltight, and shall seal gastight and oiltight on the transformer tank as applicable.

(6) The power factor of each bushing shall meet the requirements of IEEE C57.19.01, Table 6 as applicable.

2.9.2 High-Voltage and Neutral Bushings

The high-voltage and neutral bushings provided shall meet the requirements of paragraph 2.9.1, shall be designed to withstand the standard withstand test voltages as indicated in Table 1 of IEEE C57.19.01, and shall be tested in accordance with paragraph 3.2.3. High-voltage and neutral bushings shall be

of the condenser type, oil impregnated and oil-filled, and shall be provided with a suitable oil level gage or indicator and an oil drain. The seal shall be maintained by compression spring assemblies. The exterior porcelain shell shall preferably be manufactured in one piece, but may be of the two-module or three-module type construction that provides an oil tight enclosure for the core. If modules are provided, they shall be fitted with suitable oil-proof gaskets and shall be held in compression by concentric spring loading. The power factor test facility on high-voltage bushings shall be provided, and shall be suitable for use with a bushing potential device. The high-voltage and neutral bushings shall be rated as follows:

2.9.2.1 High-Voltage Bushing

(1) Insulation class, kV 500

(2) BIL rating, kV 1550

(3) Minimum current rating, amperes 1600

(4) Creepage distance ..... Light contamination

2.9.2.2 High-Voltage Neutral Bushing

(1) Insulation class, kV 25

(2) BIL rating, kV 150

(3) Minimum current rating, amperes 1200

(4) Creepage distance ..... Light contamination

2.9.3 Low-Voltage Bushings

Low-voltage bushings shall meet the requirements of paragraph 2.9.1 and IEEE C57.19.01 (1991), and shall be tested in accordance with paragraph 3.2.3. They shall be of the oil-impregnated condenser type, the exterior porcelain shell above the mounting flange shall be formed in one piece, and they shall be designed for vertical mounting. Viton gaskets shall be used for the installation of all low-voltage bushings. The low-voltage bushings shall be rated as follows:

(1) Insulation class, kV 25

(2) BIL rating, kV 150

(3) Minimum current rating, amperes 7,500

(4) Thermal rating, degrees Celsius temperature rise.....125

2.10 BUSHING-TYPE CURRENT TRANSFORMER

Two multi-ratio bushing-type current transformers shall be provided on the transformer high-voltage bushing, one 1200:5 and one 2000:5 for relaying service. All bushing-type current transformers shall conform to the requirements of IEEE C57.13 and NEMA SG 4, and shall have a minimum ANSI relaying accuracy classification of C400. The continuous thermal rating factor shall be 1.33, based upon a 30 degree Celsius average ambient air temperature. One current transformer shall be provided on each low-voltage winding for temperature indication. No current transformers are required for the high-voltage neutral bushing.

2.11 BUSHING POTENTIAL DEVICES

The manual for the transformers indicates a Westinghouse type PBA2 is installed on each transformer. However this could not be found or confirmed in a site visit and the schematic shows no PBA device installed. The site indicated they have a PCA-5 unit which goes directly to the bus and not the transformer. It is the Contractors ultimate responsibility to manufacture the new transformer with all components to ensure the same functions are maintained.

2.12 OIL

2.12.1 Quantity and Transformer Oil Certification

The Contractor shall furnish all oil required to fill the transformer and oil-filled bushings to the proper operating levels as well as the oil required for factory tests. Prior to shipment of the transformer, certification shall be submitted stating that the oil furnished for placing the transformer in service will meet the requirements specified below.

2.12.2 Type of Oil

The grade of insulating oil furnished shall be produced from a predominately naphthenic base crude petroleum, shall be new, and shall be specifically prepared and refined for use in electrical equipment as an insulating and cooling medium. Except for the oxidation inhibitor, the insulating oil shall be free from additives of every kind, either natural or synthetic.

2.12.3 Chemical, Physical, and Electrical Characteristics

The insulating oil provided shall be tested in accordance with, and shall meet the test requirements of, ASTM D 3487, Table 1, Type II prior to shipment. In addition to the requirements listed in ASTM D 3487 Table 1, the insulating oil shall contain no Polychlorinated Biphenyls (PCBs) as tested in accordance with ASTM D 4059, and the water content shall not exceed 20 parts-per-million (ppm) as tested in accordance with ASTM D 1533. The Government, at point of delivery, may draw samples in accordance with ASTM sampling standards, for testing to determine whether the oil meets the specifications. Oil so tested and failing to meet the requirements will be removed and replaced by, and at the expense of, the Contractor.

2.12.4 Sampling

Samples for testing shall be obtained as specified in ASTM Standard D 923.

2.12.5 Testing

Chemical, physical, and electrical tests shall be conducted by the Contractor in accordance with the test methods listed in ASTM D 3487, Table 1. Five certified copies of the test reports shall be furnished to the COR prior to shipment of the oil.

2.13 OIL PRESERVATION SYSTEM

2.13.1 General

The transformer shall be provided with a nitrogen blanket over oil in the transformer preservation system. The rest of the system consists of interconnecting tubing from Nitrogen tanks that maintain that blanket and provides makeup nitrogen if the oil contracts preventing fresh air from coming in. Nitrogen is lost when the oil expands to a set point thus always keeping higher pressure on the oil, over atmosphere.

2.13.2 Inert-Gas for Transformer Processing

Cylinders of nitrogen gas necessary for shipping, installing, flushing and charging the transformer shall be furnished by the Contractor. The nitrogen and cylinders shall conform to IEEE C57.12.00 (paragraph 6.6.3). Freight on returnable cylinders shall be paid by the Contractor and shall be included in the price bid for the transformer.

2.13.3 Air Cell

The oil reservoir shall contain an air cell arranged to prevent direct contact between the oil and air. The air cell material shall be nylon-impregnated nitrile rubber designed for long life and for service in contact with hot oil. The air cell shall be vented through a weather-tight breather provided with a suitable desiccant. The desiccant containers shall be located on the transformer tank at a height of approximately 48 inches above the base of the transformer so that the desiccant material can be replaced, refilled, and maintained without removing the transformer from service.

2.13.4 Liquid Level Indicator

The liquid level indicator for the reservoir (see paragraph 2.8.2) shall be arranged to close the set of low-level alarm contacts when the oil level becomes too low or the air cell sinks. The liquid level gauge shall be situated so that it can be read when facing the high-voltage side of the transformer.

2.14 COOLING EQUIPMENT

2.14.1 Radiators

The transformer shall be provided with a sufficient number of radiators to cool the oil properly. The radiators shall be located as indicated on the drawings, and so located on the tank to insure uniform circulation of the oil through the windings. The radiators shall be constructed of steel tubes or elements welded into steel headers. All welding shall be on the outside of the radiators such that there will be no crevices in which water might collect. The welding and fittings shall be smooth, both inside and out, so as to present no obstruction to the flow of oil inside and to facilitate cleaning and painting on the outside. The radiators shall be designed to withstand essentially full vacuum to permit filling the transformer under vacuum with radiators in place and radiator valves open. Valves shall be installed on each connection to the main tank so that radiators may be removed for repairs without taking the transformer out of service. Provisions shall be made for draining and venting the radiators. Lifting eyes means shall be provided for handling the radiators.

2.14.2 Forced-Air Equipment

Suitable forced-air equipment shall be provided so that the continuous forced-air-cooled capacity of the transformer will be at least 133.3 percent of the self-cooled rating without exceeding the allowable temperature rise specified in paragraph 2.2, “THERMAL DESIGN”. The forced-air equipment shall include vertical-draft propeller type fans with guards and direct-connected motors, and a rigid housing with venturi openings, and louvers or baffles, if needed, to direct the air stream against the radiator and to prevent recirculation of discharged air. The propellers shall be balanced cast aluminum and shall provide adequate air delivery with low noise level. The fan motors shall be of splash proof or totally-enclosed construction suitable for continuous service and shall have individual thermal overload protection. The fan motors shall be provided with antifriction bearings having a L10 rating of 40,000 hours minimum. The transformer forced-air equipment shall be designed to assure that the average sound level due to operation of the

transformer and accessories with all fans in operation will not exceed 74dB at rated maximum load, as measured in accordance with IEEE C57.12.90.

2.14.3 Power Supply Equipment

The power supply for fan motors will be Government-furnished, 480V, 3-phase, 60 Hz, as indicated on the contract drawings. One 3-pole, 600 V, molded-case circuit breaker of proper current rating, and conforming to NEMA AB 3 shall be provided in the control cabinet for each supply circuit (primary and alternate).

2.14.4 Cooling Control Equipment

All necessary protective and control equipment for the fan motors shall be furnished and installed in the transformer control cabinet for the transformer, or included in the controls of the Transformer Temperature Monitor. The control equipment shall be fully automatic, and designed to start and stop the fan motors as the transformer winding temperature requires. A “LEAD-LAG” selector shall be furnished to select which cooling units will operate as the first cooling group, and which cooling units will be controlled automatically to provide the additional cooling capacity, as indicated. The controls shall be designed to de-energize the fans in the event of a transformer failure resulting in fire. Provision shall be made so that it will not be necessary to shut down the entire cooling equipment when removing any cooling group for repairs. Control equipment shall consist of molded-case air circuit breakers and contactors, as required, and shall conform to NEMA ICS 2. Contactors shall be NEMA Size 1 minimum. Auxiliary relays, if required, shall have a contact rating designation of A600 or better. Additional circuit breakers for branch circuit protection of fan circuits shall be provided as required. Air circuit breakers shall be molded-case type, rated not less than 20A, conforming to NEMA AB 3. All cooling control equipment shall be designed per the applicable requirements of the National Electrical Code.

2.14.5 Automatic Transfer Switch

2.14.5.1 General

The control equipment shall include an Automatic Transfer Switch (ATS) to automatically transfer all 480 Volt transformer equipment from the primary 480 V supply to the secondary 480 V supply upon loss of primary power. The ATS shall be mounted on the transformer tank adjacent to the transformer control cabinet, and shall be an ASCO model 940, or approved equal. The ATS shall be UL 1008 listed, electrically-operated contactor type capable of automatically transferring from a primary source to an available alternate source. The ATS shall be manufactured and tested in accordance with applicable requirements of IEEE C37.90.1, NEMA ICS 1, NEMA ICS 2 and UL 1008. The ATS shall be designed and manufactured to prevent stops in an intermediate or neutral position during transfer by the use of electrical actuators and mechanical stored-energy mechanisms. An ATS designed and manufactured to effect transfers by a walking-beam or a similar device to engage handles of circuit breakers to accomplish transfer between power sources are unacceptable. Each pole of the double-throw ATS shall have separate arcing contacts of a nonwelding type. All rating data shall be shown on detail drawings and shall equal or exceed those specified. Switches shall be adequately rated for the application indicated and shall have the following characteristics:

(1) Voltage: 480 volts

(2) Number of Phases: 3

(3) Number of wires: 3

(4) Frequency: 60 Hz

(5) Number of poles: 3

(6) Continuous current rating of not less than 70 amperes

(7) Nonwelding contacts rated for use with feeder overcurrent devices indicated on the drawings and available fault current up to 22,000 amperes RMS symmetrical.

(8) Protection against transfer to a dead source ATS.

2.14.5.2 Automatic Operation

The automatic transfer switch shall transfer and remain connected to the alternate power source upon failure of the primary source. The switch shall remain connected to the alternate power source regardless of the conditions of the primary power source. If the alternate source fails and the primary source is available, the transfer switch shall automatically retransfer to the primary source.

2.14.5.3 Indicating Lights

The front of the enclosure shall be equipped with two Light Emitting Diode (LED), indicating lights each with a nameplate as designated on the drawings. A green light shall illuminate when the power is received from primary source, and a red light shall illuminate when the power is received from the secondary source CQ02.

2.14.5.4 Testing

In addition to the factory tests required in paragraph 3.2, the completely assembled ATS unit shall be subjected to operational tests. Tests performed shall demonstrate that the operational sequence of the ATS unit conforms to the requirements of the specifications with regard to operating transfer.

2.14.6 Elapsed Time Meters

Hour-indicated elapsed time meters shall be provided, as indicated, for each fan cooling group. The time meters shall be of the non-reset type, and have 6-digit registers with counter numbers at least 1/4-inch high. White numbers on black backgrounds shall provide hour indication with the last digit in contrasting colors to indicate tenths of an hour. The enclosure shall be 3-1/2 inches square, and dust resistant. The operating voltage shall be 120 volts ac.

2.15 TRANSFORMER CONTROL CABINET, WIRING, AND CONDUIT SYSTEMS

2.15.1 General

The transformer shall be provided with a control cabinet and a separate detachable conduit entry box mounted in a readily accessible location, as indicated on the contract drawings. The location shall be such that the existing conduit stub-out for transformer external control circuits shown on the drawings can be used for the same purpose with this transformer. The control cabinet and detachable conduit entry box shall be of rugged weather-proof Type 304 stainless steel construction with provision for locking. If electrically isolated from the transformer tank by vibration isolators, the control cabinet shall be provided with a grounding jumper to the transformer tank. External conduit and cable terminal connections for wiring to the transformer control cabinet shall be to the detachable conduit entry box which will facilitate easy disconnection of wiring for moving the transformer without pulling the external cables back into the conduits and without disconnection of the conduits. The conduit entry box enclosure shall contain

the terminal blocks for terminations, and a lockable latch-type door for access. These enclosures shall remain unpainted, and “piano-hinges” will not be acceptable for cabinet doors. Devices mounted on the back of hinged panel doors that are not visible from the panel door fronts, shall be mounted such that the device mounting screws do not penetrate the panel doors. Device nameplates shall be made of engraved-aluminum with black lettering.

2.15.2 Wiring

2.15.2.1 General

All enclosures and devices shall be completely wired to designated terminal blocks for connection to external devices. The Contractor's standard cables and methods of cable terminations may be used for wiring and terminations performed at the factory, however, splices will not be permitted. Any wiring extending beyond the control cabinet and conduit entry box shall be terminated at 600 V terminal blocks with 30 A capacity. Special attention shall be given to terminal wiring arrangements on the terminal blocks to permit individual conductors of each external cable to be terminated on adjacent terminal points. The wire (terminal point) designations used on the Contractor's wiring diagrams may be according to the Contractor's standard practice; however, wire and cable designations for identification of external circuits shall correspond with Government’s designations, as indicated on the contract drawings.

2.15.2.2 Control Panel and Shop Wiring

Wiring for factory assembled control panels or assemblies of electrical components on the transformer shall be of a cross-linked-thermosetting-polyethylene insulated type conforming to the requirements of NEMA WC 70 (paragraph 4.1.13). The insulation shall be moisture and heat resistant, suitable for conductor temperatures not exceeding 90 degrees-C normal operation, and shall also pass the Type A vertical flame test requirements of NEMA WC 70 (paragraph 6.8). All wires shall be single conductor stranded coated annealed copper, insulated for not less than 600-volt service. Conductors shall be Class B or Class C stranding, except hinge wires shall be Class K stranding. Hinge wires shall be used between stationary panels and swing doors, and shall be formed in wire loops that will provide rotation around the longitudinal axis of the conductors. Type SIS wire may be used in the control panel, however, Type SIS wire shall not be used in conduit runs unless specifically approved for such uses. Conductor size shall be not less than No. 12 AWG, except for current transformer secondary leads, which shall not be less than No. 10 AWG. All connections to device terminal studs or blocks shall be made with pressure-indented terminals. The completed installation shall conform to all requirements of the National Electrical Code.

2.15.3 Conduit Systems

All wiring from the transformer devices and accessories listed below shall be run in rigid galvanized conduit conforming to NEMA C80.1. Wiring shall be connected to terminal blocks in the cabinet, with the exception that short lengths of cables suitable for outdoor use will be permitted between individual device terminals and nearby connection boxes. All conduit runs installed by the Contractor shall be terminated at devices or connection boxes and at the terminal cabinet in standard pipe-threaded couplings or nipples integral with or welded to the device or cabinet. Similar pipe-threaded connections shall be provided on the terminal cabinet for attaching incoming conduit. Other conduit connections shall be made with cast metal boxes and outlet fittings having threaded outlets and gasketed covers. The conduit systems shall be electrically continuous and all threaded joints shall have the threads coated with an approved conductive joint compound. No running threads on conduit will be permitted. Rigid steel conduit shall conform to NEMA C80.1 and shall in addition, be zinc coated (galvanized) both

inside and outside. Fittings for rigid metal conduit shall conform to NEMA FB 1. Cast aluminum boxes with cast covers shall be used conforming to the requirements of UL 514B and UL 886. Short lengths of watertight flexible conduit may be used for connections to auxiliary devices, subject to approval. Flexible conduit shall conform to UL No. 1, shall have a hot dipped galvanized steel core, copper ground wire and a waterproof extruded PVC cover. Fittings for conduit shall be threaded and conform to NEMA FB1, UL 467, and UL 514B, and shall be constructed to ensure positive grounding.

2.15.4 Terminal Blocks

2.15.4.1 General

Terminal blocks for control signal and current transformer secondaries shall be removable and of binding, fillister or washer-head screw type, or stud type with contact and locking nuts. Each terminal shall be not less than No. 10 in size, having length and space for connecting at least two No. 12 AWG conductors to each terminal. Terminal blocks shall be provided to terminate all external cables and shall contain at least four spare terminals or 10 percent, whichever is greater. White or other light colored marking strips, shall be provided for circuit designation. Each connected terminal of each block shall have the circuit designation or wire number placed on the marking strip with permanent marking fluid. Two reversible or spare marking strips shall be furnished with each block.

(1) Control Signal Type. All terminal blocks for control wiring, shall be sliding link disconnect molded or fabricated type with barriers, rated not less than 600 volts with 30 ampere capacity.

(2) Current Transformer Secondaries Type. Short circuiting type terminal blocks shall be furnished for all current transformer secondary leads as shown in the contract drawings and shall have provisions for short-circuiting together all leads from each current transformer without opening any circuit. Short-circuiting the terminals of only one current transformer shall not short-circuit the terminals of any other current transformer.

2.15.5 Lighting and Convenience Receptacles

One 120 V lamp with 750 lumens minimum output, complete with housing, wiring, and switch shall be provided in the control cabinet for illumination. If an incandescent lamp is provided, the lamp shall be rated 75W, be industrial grade, and the switch shall be 20 A, T-rated. The lamp shall be placed or shielded so that direct light will be thrown on the control panel only. A 125 V, 3-wire, 20 A, GFCI type receptacle, shall be provided in the control cabinet. A 120 V thermostatically-controlled electric space heater of adequate rating shall be provided in the cabinet to prevent condensation when the outside temperature is as low as -20 degrees Celsius.

2.15.6 Auxiliary and Interposing Relays

Auxiliary and interposing relays, with the exception of time delay relays, shall be of the self-reset type and shall be provided with convertible contacts. They shall be provided where device contact ratings, which interface with external powerhouse equipment, do not meet the contract requirements of this paragraph. Relay coils and contacts shall be suitable for continuous operation in 125 Vdc or 120 Vac circuits, as required. Contacts shall have a 10 A continuous current rating. The single-contact inductive load interrupting capacity shall be not less than 1.0 A for 125 Vdc, or 6 A for 120 Vac. Relays used in 125 Vdc circuits shall be rated for operation between 90 and 140 Vdc. Relay coils used in 125 Vdc circuits shall be designed to operate at 140 Vdc continuously. Relays shall meet the requirements of NEMA ICS 2, designation A 600.

2.15.7 Control and Instrument Switches

Control and instrument switches shall be of the rotary switchboard type with handles on the front and the operating mechanisms on the rear of the panels. Each switch shall be provided with ample contact stages including spare contacts where indicated to perform the functions of the control system. Contacts shall be self-aligning and shall operate with a wiping action. A positive means of maintaining high pressure on closed contacts shall be provided. Compression springs or pivoted joints shall not be depended upon to carry current. The covers or plates on the switches shall be readily removable for inspection of contacts. The switches shall be suitable for operation on 600-volt ac or 250 volt dc circuits, shall be capable of satisfactorily withstanding a life test of at least 10,000 operations at rated current, and shall be capable of continuously carrying 20 amperes without exceeding a temperature rise of more than 30 degrees C above ambient. The single-breaking inductive load interrupting rating shall be not less than 1.5 A for 125 Vdc, or 10 A for 120 Vac. Each switch shall be provided with an escutcheon clearly marked to show each operating position. The switch identifications shall be engraved on the escutcheon plates and on separate nameplates.

2.16 JACKS, AND TOOLS

The Contractor shall furnish the following equipment for assembling, disassembling, and moving the transformer. The equipment shall remain at Little Goose Power Plant and shall remain the property of the Government after completion of the work:

2.16.1 Jacks

Not less than four heavy duty hydraulic jacks suitable and adequate to safely lift the complete transformer, including radiators, filled with oil shall be provided. Each jack shall be equipped with a pressure gage and a pressure relief device.

2.16.2 Tools

A complete set of any special tools, wrenches, or equipment that may be necessary or convenient for assembling, disassembling and moving the transformer, and also any other accessories and/or appliances which are necessary for satisfactory operation or servicing thereof and are not specified herein, shall be provided.

2.17 SPARE PARTS

All spare parts shall be duplicates of the original parts furnished and interchangeable therewith. The following spare parts for the transformer shall be furnished:

(1) Two complete sets of all gaskets needed to seal all openings into the transformer tank at the cover, manholes, handholes, openings for accessory devices, openings for high, low, and neutral bushings, and pipe connections for radiators. One complete gasket set to be used for the cover when untanking is performed, which will ensure that no weldment material will enter the transformer tank during the welding process.

(2) Six complete refills for the oil expansion tank desiccant breathers for one transformer.

2.18 NAMEPLATES

2.18.1 Transformer Nameplate

The transformer shall be provided with a cast bronze or stainless steel nameplate conforming to the requirements of IEEE C57.12.00, Table 10. In addition to the requirements of Table 10, the nameplate shall also include the following: date of manufacture, manufacturing plant location and address, Government contract number, the amount of pressure and vacuum the tank will withstand, and the transformer X/R ratio. The nameplate or an adjacent nameplate shall also include the following information for each current transformer furnished: the accuracy class, the primary and all secondary ampere ratings, and identification of the terminals to which the current rating applies. Each nameplate shall be fastened to the transformer in proper locations, with either corrosion-resistant finished round head screws, or on screw posts with corrosion-resistant finished nuts. The following transformer identification shall be provided:

(1) The core and coil assembly structural framework shall be stamped with the serial number of the transformer.

(2) The transformer serial number shall be stamped into the tank immediately adjacent to the transformer nameplate with characters approximately 1/2 inch high.

(3) The location of the centers of gravity (c.g.) of the completely assembled transformer filled with oil, and the heaviest piece for shipment without oil, shall be permanently marked on two adjacent sides of the transformer tank and shall be appropriately identified "c.g. complete" and "c.g. for shipment".

(4) A diagram plate shall be provided to show the various sling and lift positions required for proper lifting of the core and coil assembly and for the completely assembled transformer, with and without oil. It shall also indicate the untanking height and whether the transformer may be lifted when filled with oil.

2.18.2 Device Nameplates

Each item of equipment mounted in the transformer control cabinet shall be provided with an engraved nameplate. Nameplates shall be made of anodized aluminum approximately 1/8 inch thick or stainless steel, engraved and provided with black lettering. Each nameplate shall be fastened to the panels in proper locations, with either corrosion-resistant black finished round head screws, or on screw posts with corrosion-resistant black finished nuts.

PART 3 - EXECUTION

3.1 ELECTRIC WELDING

3.1.1 Preparation for Welding

Members to be joined by welding shall be cut accurately to size and, where required, shall be rolled or pressed to the proper curvature and dimensions. The edges of the members shall be sheared, flame-cut, or machined to suit the required type of welding and to allow thorough penetration. The cut surface shall expose sound metal free from laminations, surface defects caused by shearing or flame-cutting operations, or other injurious defects. The surfaces of plates to be welded shall be free from rust, grease, and other foreign matter for a distance of at least ½ inch back from the edge of the weld.

3.1.2 Welding

All welding shall be performed by the electric-arc method, by a process which will exclude the atmosphere from the molten metal and, where practicable, under procedure control using automatic machines. After being deposited, welds shall be cleaned of slag by shot blasting, unless otherwise approved, and shall show uniform sections, smoothness of weld metal, feather-edges without overlap, and freedom from porosity and clinkers. Visual inspection at the edges and ends of welds shall indicate good fusion with the base metal. Particular care shall be taken in aligning and separating the edges of members to be joined by butt-welding so that complete penetration and fusion at the bottom of the joint will be assured. All pinholes, cracks, and other defects shall be repaired by chipping or grinding to sound metal, and rewelding. Where fillet welds are used, the members shall fit closely and shall be held together during welding. The welding rods used for manual welding shall be of the heavily coated type and shall be suitable for the position in which the welding is performed.

3.1.3 Welding Process

The Contractor shall have established and recorded a specification of the welding process proposed for use and, if required, shall furnish a copy of such process specification, together with certified copies of reports of results of tests made in accordance therewith. The qualification of the welding process shall be in accordance with the requirements of AWS B2.1, and the minimum requirements of the tests shall be as stated in the appendix thereto.

3.2 FACTORY ASSEMBLY AND TESTS

3.2.1 General

The transformer shall be completely assembled and adjusted at the factory, and shall be subjected to the manufacturer's routine shop tests and also other tests as specified below. All parts shall be properly marked and identified for ease of assembly in the field. The Contracting Officer’s Representative (COR) shall witness all tests required herein unless waived in writing, and no equipment shall be shipped until it has been released for shipment by the COR. The Government shall be notified of the date of the tests sufficiently in advance of the scheduled test date so that arrangements can be made for the Government Quality Assurance Representative to be present at the tests. The factory tests, including test equipment, test methods, measurements, and computations, shall be in accordance with the applicable requirements of IEEE C57.12.00, C57.12.80 and C57.12.90, unless otherwise specified, and shall be submitted for approval. All routine tests required by the referenced standards shall be made and reported whether specifically required by these specifications or not. Except where otherwise specified in the Standards, all measurements and tests involving alternating voltage shall be made with 60-Hz sine-wave voltage. The Contractor shall furnish five certified copies of all test reports, including oscillograms and complete data on all tests. The witnessing representatives of the Contractor and the COR shall sign reports of all witnessed tests. The cost of performing all tests shall be borne by the Contractor and shall be included in the unit prices for the items of the Bid Schedule

3.2.2 Power Transformer Tests

All routine and design power transformer tests as indicated in IEEE C57.12.00, Table 19 shall be performed. In addition to these tests, the following tests and specific test requirements shall be performed:

3.2.2.1 Transformer Tank and Radiators

The transformer tank and radiators shall be tested for leaks when filled with oil. The test pressure shall be less than that of the pressure relief setting of the pressure relief device, subject to approval, and shall be maintained for at least 4 hours. The test may be constructed simultaneously with the radiators attached to the tank, or each bank of radiators may be tested individually. When separate tank compartments are furnished for parts of the tap changer, each such compartment shall be subjected to both internal and external pressures of 10 psi for 30 minutes without leaking. The tank wall surfaces shall be checked for hot spots during the heat run tests. The tank wall hot-spot temperature rise shall not exceed 70 degrees-C for any transformer while operating at 100 percent of its rating.

3.2.2.2 Impulse Tests

Oscillograms shall be taken of surge voltages during all impulse tests and of neutral current during the full-wave impulse tests. The impulse tests shall be made by direct application without 60-Hz excitation. Lightning impulse tests shall be performed on neutral terminals. The oscillograph shall be adjusted to give the same deflection on reduced-voltage and full-voltage impulse waves to facilitate comparison of the oscillograms. Comparisons shall also be made of the consecutive chopped-wave impulse oscillograms. Oscillographic comparison traces shall be printed, and provided in the certified test report. Any deviation in voltage or neutral current wave shape between reduced-voltage and full-voltage full-wave tests, shall be explained to the satisfaction of the COR or it will be considered cause for rejection of the transformer.

3.2.2.3 Induced Voltage Test With Partial Discharge Measurements

(1) During the 7,200-cycle test, the corona level, excluding background noise, shall not exceed 250 microvolts at the full test voltage. Any variation in corona intensity before and after application of full 7,200-cycle test voltage shall be explained to the satisfaction of the COR.

(2) It is recognized that sizable corona readings during tests are likely to occur from causes external to the transformer itself, such as corona in the high-voltage test circuit, noise from shop equipment, other tests, and radiation or induction pickup through air between the measuring circuit and the high-voltage test equipment. All reasonable precautions shall be taken to minimize such external interference, and the Contractor shall demonstrate that this corona is in no event internal to the transformer by sample tests showing the difference in characteristics between corona under oil and corona in air. It is entirely permissible to utilize special shielding or over insulated bushings to minimize the effects of bushing corona.

(3) During the one-hour test, the corona level shall not exceed 100 microvolts at the full test voltage.

(4) All records, meter readings, and data taken during the above described tests, together with a diagram of the circuit employed, shall be incorporated in the certified test report.

3.2.2.4 No-Load Tap Changer Test

The completely assembled no-load tap changer shall be subjected to ten complete tap changing cycles (end-tap to end-tap) to demonstrate that all linkages, contacts, and indicating mechanisms are properly assembled and aligned and free from excessive slack, deformation, or fragility.

3.2.2.5 Audible Sound Level Test

The transformer's sound level shall not exceed the value specified in paragraph 2.1.3, "Ratings and Electrical Characteristics". If the sound level exceeds the specified limit, the Contractor shall modify the transformer as required to reduce the sound level to the specified level, and the sound level test repeated. The abatement technique used to reduce the tested sound level to the guaranteed sound level shall be subject to approval of the Contracting Officer.

3.2.2.6 Leakage Reactance Measurement Test

The transformer shall have leakage reactance measurement tests performed between the high-voltage winding and the low-voltage windings, for use as baseline data for future testing. Voltage, current, and phase angle measurements shall be recorded, and the leakage reactance calculated. The proposed leakage reactance test equipment, setup, and test levels shall be included in the factory test procedures submittal.

3.2.2.7 Switching Impulse Test

(1) The Transformer shall have a switching impulse test in accordance with IEEE C57.12.90 paragraph 10.2. This test consists of applying or inducing a switching impulse wave between each high-voltage line terminal and ground with a crest value equal to the specified test. The test serious shall consist of one reduced voltage transient at 50-70 percent of specified test level followed by two full voltage transients at the specified test level using either positive or negative polarity waves, or both.

(2) The switching impulse voltage wave shall have a crest value in accordance with the assigned insulation level, subject to tolerance of +/- 3 percent and shall exceed 90 percent of the crest value for at least 200 microseconds. The actual time to crest shall be greater than 100 microseconds, and the time to the first voltage zero on the tail of the wave shall be at least 1000 microseconds. See saturation solution in IEEE C57.12.19 if first voltage to zero is less than 1000 microseconds.

(3) The test is successful if there is no sudden collapse of voltage indicated on the oscillograms. Successive oscillograms may differ, however because of the influence of magnetic saturation on impulse duration.

3.2.2.8 Sweep Frequency Response Analysis Test

The transformer shall have a sweep frequency response analysis (SFRA) test performed, for use as baseline data for future testing. The equipment to be used for performance of this test shall be Doble Model M5100B, or approved equal. The proposed SFRA test equipment, setup, and test procedure shall be included in the factory test procedures submittal.

(1) Test Equipment. The excitation source for the SFRA test shall generate a sinusoidal waveform at a constant magnitude over a 20 Hz to 2 MHz frequency range, to allow for consistent measurement of the transfer function across the frequency range. Successive measurements shall be logarithmically spaced at a maximum of 5 percent of the previous measurement, to assure a clear definition of the waveform shape across the frequency range. The test set shall be capable of measuring from 0 to –80 dB, or lower, over the frequency range. The test system should provide a 50 Ohm characteristic impedance for consistency between different test systems. Test leads shall consist of coaxial cables of the same length.

(2) Test Connections. All windings shall be tested as indicated below, for each tap position.

SINGLE-PHASE, THREE WINDING TRANSFORMER			
TEST #1	***TEST #2**	****TEST #3**	**TEST #4**
H1 – H2	H1 – H2	H1 – H2	H1 – X1
TEST #5	**TEST #6**	**TEST #7**	**TEST #8**
H1 – Y1	X1 – X2	Y1 – Y2	X1 – Y1

* Indicates short circuit test with X1 and X2 shorted together
** Indicates short circuit test with Y1 and Y2 shorted together

(3) Data Format. The SFRA software data files shall be submitted along with the transformer test report. The test report data shall be viewable in Microsoft Excel format, and shall include:

(a) Frequency
(b) Magnitude
(c) Phase
(d) Tap positions for each test
(e) Previous tap position for neutral tap test
(f) Relevant nameplate data
(g) Test set information (make, model, calibration)

(4) Data Interpretation. SFRA testing produces traces which provides information related to the physical geometry of the test specimen. The factory SFRA tests performed on the transformer creates baseline data for use in future testing, and helps in recognizing obvious manufacturing defects, such as open circuits, short circuits, winding deformations.

3.2.2.9 Combustible Gas-In-Oil Analysis

Samples of the transformer insulating oil shall be taken, and combustible gas-in-oil analysis tests shall be performed as follows. Identity of samples and results of analyses shall be included in the certified test report.

(1) After oil-filling of the transformer, and prior to the performance of any transformer factory acceptance tests.

(2) Prior to the performance of temperature rise testing.

(3) After completion of all transformer factory acceptance tests.

3.2.3 Bushing Tests

Bushing tests shall be performed in accordance with IEEE C57.19.00 and IEEE C57.19.01 (2000) for high-voltage and high-voltage neutral bushings, and IEEE C57.19.01 (1991) for low-voltage bushings. Any bushing that fails to pass all tests to which it is subjected will be rejected. The Contractor shall submit, without additional cost to the Government, five certified copies of all Bushing Test Reports.

3.2.3.1 Bushing Design Tests

Bushing design tests shall be performed on one bushing of each type provided in accordance with IEEE C57.19.00 (paragraph 7.2), unless these tests have previously been performed on bushings of the same manufacture, design, type, and rating as those being provided within 5 years of the date of this contract, in which case the requirements for repeating these design tests will be waived and certified copies of the test results of satisfactory tests of this kind shall be furnished. If any bushing given the impulse tests fails to pass any of the tests, then all bushings of the same type and rating

shall be subjected to the impulse tests at no additional cost to the Government.

3.2.3.2 Bushing Withstand Test Voltages

The bushings shall be tested per the applicable requirements of IEEE C57.19.01, Table 1.

3.2.3.3 Routine Tests

Each new bushing provided shall be subjected to the routine tests in accordance with IEEE C57.19.00 (paragraph 7.4).

3.2.3.4 Bushing Current Transformer Tests

Each bushing current transformer shall be given routine tests in accordance with IEEE C57.13 (paragraph 4.7.2), including a low-frequency dielectric test of the secondary of 2,500 V to ground for one minute. Induced potential tests shall be made at the full required voltage and for the full required duration corresponding to the test source frequency. Each current transformer shall be checked for proper nameplate and polarity markings, and after installation on the power transformer it shall be given a polarity check and ammeter ratio check to ensure correct installation. The Contractor shall furnish, without additional cost to the Government, five certified copies of the following data:

(1) Typical excitation curves for each turn ratio.

(2) Typical ratio correction factor curves for each turn ratio.

(3) The resistance of the secondary winding at 75 degrees-C, including the approximate resistance of the secondary leads from the transformer to the terminal blocks in the terminal cabinet.

3.3 FACTORY CLEANING AND PAINTING

3.3.1 General

All interiors and exteriors of the tanks, enclosures, cabinets, and other metal parts which are not galvanized or of corrosion-resistant material and are exposed to oil or weather shall be thoroughly cleaned and painted. Cleaning shall be by degreasing and abrasive blasting or other means to remove all grease, scale, corrosion, and foreign substances.

3.3.2 Interior Surfaces

All interior surfaces of the main transformer tanks shall be given at least one priming coat and one finish coat of oil-resistant paint or enamel. The interior color shall be white.

3.3.3 Exterior Surfaces

All exterior surfaces shall be given a primer and two finish coats of pigment paint in the factory. The paint shall be epoxy ANSI No. 70 gray color, applied over a properly prepared, primed surface. The dry film thickness of the primer shall be a minimum of 1.5 mils, and that of the epoxy a minimum of 3.5 mils. One gallon of paint, from the same batch used on the transformer, shall be supplied with the transformer for touching up. With prior approval of the Contracting Officer, other comparable paint type may be used.

3.3.4 Machined Surfaces

All machine-finished or bright surfaces shall be thoroughly cleaned, coated with a suitable, easily removed, corrosion-resistant compound, and wrapped or otherwise protected from damage in shipment.

3.4 SHIPMENT, HAULING, AND SITE ASSEMBLY

The transformer equipment, accessories, and spare parts shall be prepared for shipment f.o.b. Little Goose Dam Powerhouse, inspected, moved into its final operating storage location, re-assembled and tested per the requirements of SECTION 01600.

- END OF SECTION –

Section K - Representations, Certifications and Other Statements of Offerors

CLAUSES INCORPORATED BY FULL TEXT

52.203-2 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985)

(a) The offeror certifies that --

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to –

(i) Those prices,

(ii) The intention to submit an offer, or

(iii) The methods of factors used to calculate the prices offered:

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory --

(1) Is the person in the offeror's organization responsible for determining the prices offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provison _____ (insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization);

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision.

(c) If the offeror deletes or modifies subparagraph (a)(2) of this provision, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

(End of clause)

52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (APR 1991)

(a) The definitions and prohibitions contained in the clause, at FAR 52.203-12, Limitation on Payments to Influence

Certain Federal Transactions, included in this solicitation, are hereby incorporated by reference in paragraph (b) of this Certification.

(b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989,--

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

(End of provision)

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2005)

(a)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (b) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (b) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(X) Paragraph (b) applies.

(_) Paragraph (b) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(b) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 2004)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 335311.

(2) The small business size standard is 750 employees.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it ( ) is, ( ) is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it ( ) is, ( ) is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a women-owned small business concern.

(4) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a veteran-owned small business concern.

(5) (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (b)(4) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a service-disabled veteran-owned small business concern.

(6) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, as part of its offer, that--

(i) It ( ) is, ( ) is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It ( ) is, ( ) is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (b)(6)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating in the joint venture. (The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture:_____.) Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(c) Definitions. As used in this provision--

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern," means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern," means a small business concern --

(1) That is at least 51 percent owned by one or more women; in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice.

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, HUBZone small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)

The offeror represents that --

(a) ( ) It has, ( ) has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;

(b) ( ) It has, ( ) has not, filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

52.222-25 AFFIRMATIVE ACTION COMPLIANCE (APR 1984)

The offeror represents that

(a) [ ] it has developed and has on file, [ ] has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or

(b) [ ] has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(End of provision)

52.222-38 COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (DEC 2001)

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 38 U.S.C. 4212(d) (i.e., if it has any contract containing Federal Acquisition Regulation clause 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans), it has submitted the most recent VETS-100 Report required by that clause.

(End of provision)

52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)

(a) Executive Order 13148, of April 21, 2000, Greening the Government through Leadership in Environmental Management, requires submission of this certification as a prerequisite for contract award.

(b) By signing this offer, the offeror certifies that--

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C.

13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

( ) (i) The facility does not manufacture, process, or otherwise use any toxic chemicals listed in 40 CFR 372.65;

( ) (ii) The facility does not have 10 or more full-time employees as specified in section 313.(b)(1)(A) of EPCRA 42 U.S.C. 11023(b)(1)(A);

( ) (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

( ) (iv) The facility does not fall within the following Standard Industrial Classification (SIC) codes or their corresponding North American Industry Classification System sectors:

(A) Major group code 10 (except 1011, 1081, and 1094.

(B) Major group code 12 (except 1241).

(C) Major group codes 20 through 39.

(D) Industry code 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce).

(E) Industry code 4953 (limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C (42 U.S.C. 6921, et seq.), 5169, 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis); or

( ) (v) The facility is not located within the United States or its outlying areas.

(End of clause)

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (SEP 2004)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries subject to this provision include: Cuba, Iran, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.209-7002 DISCLOSURE OF OWNERSHIP OR CONTROL BY A FOREIGN GOVERNMENT (SEP 1994)

(a) Definitions. As used in this provision--

(1) "Entity controlled by a foreign government" means--

(i) Any domestic or foreign organization or corporation that is effectively owned or controlled by a foreign government; or

(ii) Any individual acting on behalf of a foreign government.

(2) "Effectively owned or controlled" means that a foreign government or any entity controlled by a foreign government has the power, either directly or indirectly, whether exercised or exercisable, to control or influence the election or appointment of the Offeror's officers, directors, partners, regents, trustees, or a majority of the Offeror's board of directors by means, e.g., ownership, contract, or operation of law.

(3) "Foreign government" means any governing body organized and existing under the laws of any country other than the United States and its possessions and trust territories and any agent or instrumentality of that government.

(4) "Proscribed information" means--

(i) Top Secret information;

(ii) Communications Security (COMSEC) information, except classified keys used to operate secure telephone unites (STU IIIs);

(iii) Restricted Data as defined in the U.S. Atomic Energy Act of 1954, as amended;

(iv) Special Access Program (SAP) information; or

(v) Sensitive Compartmental Information (SCI).

(b) Prohibition on award. No contract under a national security program may be awarded to a company owned by an entity controlled by a foreign government if that company requires access to proscribed information to perform the contract, unless the Secretary of Defense or designee has waived application of 10 U.S.C.2536(a).

(c) Disclosure.
The Offeror shall disclose any interest a foreign government has in the Offeror when that interest constitutes control by a foreign government as defined in this provision. If the Offeror is a subsidiary, it shall also disclose any reportable interest a foreign government has in any entity that owns or controls the subsidiary, including reportable interest concerning the Offeror's immediate parent, intermediate parents, and the ultimate parent. Use separate paper as needed, and provide the information in the following format:

Offeror's Point of Contact for Questions about Disclosure
(Name and Phone Number with Country Code, City Code and Area Code, as applicable)

Name and Address of Offeror

Name and Address of Entity Controlled by a Foreign Government	Description of Interest, Ownership Percentage, and Identification of Foreign Government

(End of provision)

252.225-7020 TRADE AGREEMENTS CERTIFICATE (JAN 2005)

(a) Definitions. Designated country end product, nondesignated country end product, qualifying country end product, and U.S.-made end product have the meanings given in the Trade Agreements clause of this solicitation.

(b) Evaluation. The Government--

(1) Will evaluate offers in accordance with the policies and procedures of part 225 of the Defense Federal Acquisition Regulation Supplement; and

(2) Will consider only offers of end products that are U.S.-made, qualifying country, or designated country end products unless--

(i) There are no offers of such end products;

(ii) The offers of such end products are insufficient to fulfill the Government's requirements; or

(iii) A national interest waiver has been granted.

(c) Certification and identification of country of origin.

(1) For all line items subject to the Trade Agreements clause of this solicitation, the offeror certifies that each end product to be delivered under this contract, except those listed in paragraph (c)(2) of this provision, is a U.S.-made, qualifying country, or designated country end product.

(2) The following supplies are other nondesignated country end products:

(Line Item Number) (Country of Origin)

(End of provision)

252.225-7031 SECONDARY ARAB BOYCOTT OF ISRAEL (APR 2003)

(a) Definitions. As used in this provision--

(1) Foreign person means any person (including any individual, partnership, corporation, or other form of association) other than a United States person.

(2) United States person is defined in 50 U.S.C. App. 2415(2) and means--

(i) Any United States resident or national (other than an individual resident outside the United States who is employed by other than a United States person);

(ii) Any domestic concern (including any permanent domestic establishment of any foreign concern); and

(iii) Any foreign subsidiary or affiliate (including any permanent foreign establishment) of any domestic concern that is controlled in fact by such domestic concern.

(b) Certification. If the offeror is a foreign person, the offeror certifies, by submission of an offer, that it--

(1) Does not comply with the Secondary Arab Boycott of Israel; and

(2) Is not taking or knowingly agreeing to take any action, with respect to the Secondary Boycott of Israel by Arab countries, which 50 U.S.C. App. 2407(a) prohibits a United States person from taking.

(End of provision)

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Section L - Instructions, Conditions and Notices to Bidders

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INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS

L.1 INTRODUCTION.

a. Invitation. Your firm is invited to submit a proposal in response to Request for Proposal No. W912DW-05-R-0009 for the project entitled "NPR Spare Transformers – Reverse Auction". Prospective offerors are required to prepare and submit proposals that will be evaluated in accordance with Sections L and M of the solicitation. Proposals will be evaluated based upon technical merit and price using the technically acceptable lowest price source selection process. The Government intends to procure this equipment on a competitive basis in accordance with the provisions set forth in FAR Part 15 and this RFP, and make award on initial offers without further discussions or additional information. It is anticipated that this solicitation will result in multiple firm fixed-price contracts, a minimum of three and as many as four will be awarded to the firm(s) submitting the proposals that: a) conform to the terms and conditions of the solicitation; b) are considered to offer the best value to the Government in terms of the evaluation factors, including price; and; c) are determined to be in the best interest of the Government. It is very important to read all sections of this RFP prior to assembling your proposal in order for your firm to submit a successful offer.

b. Project Description. Seattle District on behalf of the Northwestern Division of the U.S. Army Corps of Engineers and Bonneville Power Administration (BPA) has a requirement to procure four spare transformers to be delivered to various hydropower dams located throughout the region.

L.2 PROPOSAL SUBMITTAL REQUIREMENTS.

a. General Requirements.

(1) Proposals shall be submitted in two parts: (a) technical proposal, and (b) price proposal. Each shall be submitted in a separate envelope or package with the type of proposal (i.e., technical or price) clearly printed on the outside of the envelope or package. **A separate technical and price proposal shall be submitted for each NPR Spare Transformer being offered**. Each technical proposal shall demonstrate the merit of the technical approach offered and shall consist of information and data to facilitate technical rating of proposals. Proposals must set forth full, accurate, and complete information as required by this RFP. Absence of information will be deemed as if no support for that criterion was provided. Offerors submitting proposals should limit submission to data essential for evaluation of proposals so that a minimum of time and money is expended in preparing information required by the Request for Proposals (RFP).

(2) Proposals are to be on 8 ½ x 11-inch paper, to the maximum extent practicable, and submitted in standard letter (8½ x 11-inch) hardback loose-leaf binders. Contents of binders shall be tabbed and labeled to afford easy identification from the proposal Table of Contents. Pages shall be numbered consecutively. Materials shall not be incorporated by reference or reiteration of the RFP, any such material will not be considered for evaluation; it shall be presented in a manner, which allows it to "STAND ALONE" without need for evaluators to reference other documents. Unnecessarily elaborate brochures or other presentation materials beyond those sufficient to present complete and effective responses are not desired and may be construed as an indication of the proposer's lack of cost-consciousness. Elaborate artwork, expensive paper and bindings, and expensive/extensive visual and other presentation aids are neither necessary nor wanted. Additional information describing the proposed transformer(s) may be included but must be in a separate, marked section and it will not be used in the rating of the proposal and will not become part of the contract. Offerors are encouraged to structure your proposal submission using guidelines presented in Section M. Penalty for making false statements in proposals is prescribed in 18 U.S.C. 1001

NOTE: A complete listing of any and all proposed exceptions, deviations, or additions to the specification must be compiled in a separate, marked section of your proposal.

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b. Technical Proposal Format. Submit 6 copies, consisting of the original and 5 copies. As a minimum, each copy of the technical proposal should follow the general format specified below. Pages should be numbered from beginning to end, without repeating for new sections.

(1) Cover Letter: The Technical Proposal Cover Letter should be the first page of your technical proposal and must show the following:

(a) Solicitation number;

(b) Name, address, telephone and facsimile numbers of the Offeror, and electronic address, if available.

(c) Names, titles, telephone and facsimile numbers, and electronic addresses, if available, of persons authorized to negotiate on the Offeror's behalf with the Government in connection with this solicitation.

(d) List of exceptions, deviations, of additions to the specifications along with the location of the section in the proposal that contains the explanation of each.

(e) Name, title, and signature of the person authorized to sign the proposal.

(2) Table of Contents: List all sections contained in the technical proposal. A separate section shall be provided for each evaluation criterion. Any additions or revisions to the proposal shall include an updated Table of Contents for each set.

Technical Evaluation Criteria Include:

a. Guaranteed Transformer Characteristics

b. Drawings and Descriptive Data

c. Manufacturer's Experience

d. Quality Control

e. Past Performance

f. Schedule

(3) Technical Data: Consisting of submittal requirements described in Section M shall be furnished as part of the formal proposal and shall meet all requirements of the RFP, technical specifications and referenced regulations. Your offer shall be specific and complete, and demonstrate a thorough understanding of the requirements.

C. Price Proposal Format.

(1). The contents of your price proposal should include:

(a) Section A - Solicitation, Offer, and Award (SF 33) and Corporate Certificate/Authority to Bind Partnership.

(b) Section B - Schedule with prices for all line items pertaining to the transformer included in your technical proposal.

(c) Section K – Representations, Certifications, and Other Statements of Offerors

(d) Small Business Subcontracting Plan (See Notice to Large Businesses attached to Section A)

L.4 TECHNICAL MERIT RATINGS. Proposals will be evaluated using the following ratings:

a. Acceptable

b. Non-Acceptable

END OF SECTION

CLAUSES INCORPORATED BY FULL TEXT

52.204-6 DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (OCT 2003)

(a) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS+4" followed by the DUNS number or "DUNS+4" that identifies the offeror's name and address exactly as stated in the offer. The DUNS number is a nine-digit number assigned by Dun and Bradstreet, Inc. The DUNS+4 is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the offeror to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11) for the same parent concern.

(b) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number--

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business name.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company physical street address, city, state and Zip Code.

(iv) Company mailing address, city, state and Zip Code (if separate from physical).

(v) Company telephone number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(End of provision)

52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (JAN 2004)

(a) Definitions. As used in this provision--

“Discussions” are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer's discretion, result in the offeror being allowed to revise its proposal.

“In writing or written” means any worded or numbered expression which can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

“Proposal modification” is a change made to a proposal before the solicitation's closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

“Proposal revision” is a change to a proposal made after the solicitation closing date, at the request of or as allowed by a Contracting Officer as the result of negotiations.

“Time”, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

(b) Amendments to solicitations. If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Offerors shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

(c) Submission, modification, revision, and withdrawal of proposals. (1) Unless other methods (e.g., electronic commerce or facsimile) are permitted in the solicitation, proposals and modifications to proposals shall be submitted in paper media in sealed envelopes or packages (i) addressed to the office specified in the solicitation, and (ii) showing the time and date specified for receipt, the solicitation number, and the name and address of the offeror. Offerors using commercial carriers should ensure that the proposal is marked on the outermost wrapper with the information in paragraphs (c)(1)(i) and (c)(1)(ii) of this provision.

(2) The first page of the proposal must show--

(i) The solicitation number;

(ii) The name, address, and telephone and facsimile numbers of the offeror (and electronic address if available);

(iii) A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;

(iv) Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation; and

(v) Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

(3) Submission, modification, or revision, of proposals.

(i) Offerors are responsible for submitting proposals, and any modifications, or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that proposal or revision is due.

(ii)(A) Any proposal, modification, or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is “late” and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--

(1) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or

(2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(3) It is the only proposal received.

(B) However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(iii) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(iv) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(v) Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision at 52.215-5, Facsimile Proposals. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.

(4) Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.

(5) Offerors shall submit proposals in response to this solicitation in English, unless otherwise permitted by the solicitation, and in U.S. dollars, unless the provision at FAR 52.225-17, Evaluation of Foreign Currency Offers, is included in the solicitation.

(6) Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.

(7) Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.

(8) Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.

(d) Offer expiration date. Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).

(e) Restriction on disclosure and use of data. Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall--

(1) Mark the title page with the following legend: This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with-- the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]; and

(2) Mark each sheet of data it wishes to restrict with the following legend: Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

(f) Contract award. (1) The Government intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and subfactors in the solicitation.

(2) The Government may reject any or all proposals if such action is in the Government's interest.

(3) The Government may waive informalities and minor irregularities in proposals received.

(4) The Government intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

(5) The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the
proposal.

(6) The Government reserves the right to make multiple awards if, after considering the additional administrative costs, it is in the Government's best interest to do so.

(7) Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by the Government.

(8) The Government may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or subline items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or understated as indicated by the application of

cost or price analysis techniques. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

(9) If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.

(10) A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the time specified in the proposal shall result in a binding contract without further action by either party.

(11) If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:

(i) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.

(ii) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.

(iii) The overall ranking of all offerors, when any ranking was developed by the agency during source selection.

(iv) A summary of the rationale for award.

(v) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(vi) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

(End of provision)

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of multiple firm fixed price contracts resulting from this solicitation.

(End of clause)

52.232-13 NOTICE OF PROGRESS PAYMENTS (APR 1984)

The need for customary progress payments conforming to the regulations in Subpart 32.5 of the Federal Acquisition Regulation (FAR) will not be considered as a handicap or adverse factor in the award of the contract. The Progress Payments clause included in this solicitation will be included in any resulting contract, modified or altered if necessary in accordance with subsection 52.232-16 and its Alternate I of the FAR. Even though the clause is included in the contract, the clause shall be inoperative during any time the contractor's accounting system and controls are determined by the Government to be inadequate for segregation and accumulation of contract costs.

(End of clause)

52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER—CENTRAL CONTRACTOR REGISTRATION (OCT 2003)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term “EFT” refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for--

(i) Making a correct payment;

(ii) Paying any prompt payment penalty due; and

(iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(f) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register separately in the CCR database and shall be paid by EFT in accordance with the terms of this clause. Notwithstanding any other requirement of this contract, payment to an ultimate recipient other than the

Contractor, or a financial institution properly recognized under an assignment of claims pursuant to subpart 32.8, is not permitted. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(i) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

(End of Clause)

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer located at:

Corps of Engineers, Seattle District
ATTN: CENWS-CT
4735 East Marginal Way South
Seattle, WA 98134

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

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EVALUATION OF OFFERS

M.1 INTRODUCTION This solicitation includes the requirement to furnish a total of four spare transformers. Offerors may submit proposals on any or all transformers. A separate technical and price proposal shall be submitted for each transformer offered. For a proposal to result in an awardable contract, it must at least meet all minimum technical requirements, conform to all required terms and conditions, and include all required certifications. While the intent is to keep the offeror's pre-award proposal effort to a minimum, proposals must provide adequate detail for evaluators to determine how the offeror's proposal meets the RFP criteria. In order that evaluation may be accomplished on the merit of the material submitted, no dollar costs are to be included in Technical Proposal. The proposal shall not merely offer to perform the work in accordance with, or simply repeat, the specifications, but shall reflect an understanding of the work environment, contract requirements, technical approaches, principles and techniques. Repeating or restating the specifications without sufficient elaboration will not be acceptable.

M.2 EVALUATION CRITERIA. "Proposals for each transformer will be evaluated separately. However both price and technical factors will be evaluated for all proposals in the context of a low-priced, technically acceptable evaluation. Price will be evaluated separately as described in M.3a(8). The following nonpriced evaluation factors are of equal importance."

a. Guaranteed Transformer Characteristics.

b. Drawings and Descriptive Data.

c. Experience.

d. Quality Control.

e. Past Performance.

f. Schedule.

M.2.1 Detroit Dam Spare Transformer

M.2.1.1 SUBMITTAL REQUIREMENTS: Offerors shall provide the following information in its technical proposal.

a. Guaranteed Transformer Characteristics.

(1) Transformer Nameplate Data. Provide transformer nameplate data, including kVA rating, kV rating, impedance, winding diagram, and basic impulse level (BIL) ratings. The nameplate data must indicate that the proposed transformer has the following ratings: *29,000* kVA, *230* kV GrdY/132.8 kV high-voltage, 13.2 kV low-voltage, Class OFAF cooling, 7.2 % impedance, and basic impulse level (BIL) ratings of 750 kV for the high-voltage winding, 150 kV for the high-voltage neutral winding, and 110 kV for the low-voltage winding.

(2) Load Loss. Provide evidence that load-loss in kW at 100 percent of rated kVA, when tested per Section *16277, paragraph 3.2* does not exceed *75* kW. If the offeror's proposed

guaranteed losses are below *75* kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Detroit Dam"* and the proposed guaranteed load losses.

(3) No-Load Loss. Provide evidence that no-load loss in kW at rated voltage, when tested per Section *16277, paragraph 3.2,* does not exceed 35 kW. If the offeror's proposed guaranteed losses are below *35* kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Detroit Dam"* and the proposed guaranteed no-load losses.

(4) Audible Sound Level. Submit evidence that the audible sound level as measured during the design tests shall not exceed 70 dB at the OFAF full-load operation.

b. Drawings and Descriptive Data. Provide the following information.

(1) A sketch or drawing of the proposed transformer, showing outline dimensions, mounting details, location of bushings, number, location, and arrangement of coolers or radiators, location of accessories, and general appearance. The transformer sketch or drawing shall contain sufficient information to confirm that the proposed transformer conforms to existing site requirements for dimensions, location of external connections, location of accessories, and weights as shown on drawing DEP-5.5-6-1A40/1.

(2) Description of core construction, including lamination thickness, material, and insulation proposed.

(3) Description of oil preservation equipment proposed.

(4) Approximate weight of the complete transformer with oil, in pounds.

(5) Approximate shipping weight of heaviest part to be shipped, in pounds.

c Experience

(1) Manufacturer's Experience. Provide documentation that demonstrates that the manufacturer of the proposed transformer has a minimum of ten (10) years experience in the design and fabrication of large generator step-up transformers, rated greater than or equal to 230 kV and 30 MVA single-phase. At a minimum the documentation shall consist of a list of previously supplied transformers and include the information contained in the following example table.

Example

Customer/ Project Name	Year Manufact -ured	Voltage	MVA Rating	Single or Three Phase	Type (GSU, auto, 3 winding, etc)
Power Company A	1980	525-13.2	145	single	GSU
Power Company B	1999	13.2-13.2-115	90/120	Three	3 winding
Etc.					

(2) Transformer Site Assembly Contractor Experience. If the transformer site assembly contractor is other than the transformer manufacturer, provide documentation that the proposed contractor has a minimum of ten (10) years experience in the site assembly and oil filling of large generator step-up transformers, rated greater than or equal to 230 kV and 30 MVA single-phase. If the transformer site assembly contractor is the same as the transformer manufacturer, this required experience documentation shall be included in the manufacturer's experience documentation.

(3) Manufacturer's Erecting Engineer. Provide documentation that demonstrates that the manufacturer's proposed erecting engineer(s) is an employee of the transformer manufacturer, has been engaged in the witnessing and directing of the field (on-site) assembly and testing of generator step-up power transformers, rated greater than or equal to 230 kV and 30 MVA single-phase as specified herein, for a minimum of five (5) years.

d. Quality Control. Provide the name of the transformer manufacturer, the location of the proposed manufacturing facility and documentation that demonstrates that the transformer manufacturing facility has current ISO 9001 Certification.

e. Past Performance. Submit a description of at least five (5) contracts for similar large generator step-up transformers performed as a prime contractor or manufacturer in the last ten years. Complete this information on the first page of the Past Performance Information included at the end of this section and submit with your offer for Past Performance. Complete Part I of the Contractor Performance Questionnaire also included at the end of this section and forward to at least 5 references and have them returned as specified on the form, "Past Performance Questionnaire". The references used for Past Performance must be among those listed in the table of Manufacturer's Experience above in paragraph M.2.1.1c(1).

f. Schedule. Provide a schedule that clearly identifies from date of contract award (for proposal purposes, assume award date of 1 September 2005), the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Foster Dam (storage location); movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date. The schedule as included in the proposal package will become the binding contractual schedule after award.

M.2.1.2 EVALUATION METHOD

a. Guaranteed Transformer Characteristics. In order to receive a rating of acceptable the offeror must provide sufficient data to demonstrate that the transformer being proposed meets the minimum transformer characteristics identified above in Para. M.2.1.1 a(1) thru (4), inclusive.

b. Drawings and Descriptive Data. To be considered acceptable for this criterion the offeror must submit a transformer sketch or drawing containing sufficient data demonstrating conformance to site requirements identified on referenced drawing in Para. M.2.1.1b above.

c. Experience. The proposal will be evaluated on the documented experience of the transformer manufacturer, the transformer site assembly contractor, and the manufacturer's erecting engineer. To be considered acceptable for this criterion the offeror must provide sufficient documented experience to demonstrate compliance with the minimum requirements identified in Para. M.2.1.1c(1) thru (3), inclusive.

d. Quality Control. To be considered acceptable the name of the transformer manufacturer must be provided as well as the location of the proposed manufacturing facility and the transformer manufacturing facility must have a current ISO 9001 Certificate.

e. Past Performance. The proposal will be evaluated for past performance of the prime contractor and/or transformer manufacturer. To be considered acceptable for this criterion the offeror must ensure that the Contracting Officer is in receipt of at least 5 completed Contractor Performance Questionnaires (submitted by the client to the Contracting Officer) by the proposal due date, and receive ratings of Satisfactory or better for categories (1) thru (5) below for each evaluation. Note: In accordance with FAR 15.305(iv); in the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on past performance, and will therefore receive a neutral rating.

(1) Transformer Workmanship
(2) Overall Customer Satisfaction
(3) Schedule
(4) Budget
(5) Satisfaction with Site Assembly work

f. Schedule. The schedule will be evaluated for compliance with the required activities and delivery dates identified in Section F, "DELIVERIES OR PERFORMANCE", and the schedule must contain the following intermediate activities: date of contract award (for schedule development purposes assume 1 September 2005; contractor shall revise schedule with actual date of contract award); the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Foster Dam (storage location); movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date.

M.2.1.3 SPECIAL FACTORS FOR PRICE EVALUATION – Detroit Dam Spare Transformer. In evaluation of price, the following will be considered:

a. The guaranteed transformer no-load losses will be taken into consideration. For this purpose, all offers which guarantee a no-load loss less than *35* kW at rated voltage and rated frequency will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $7,030 per kW of reduced no-load loss under the above conditions for the purposes of bid evaluation.

b. The guaranteed transformer load losses will be taken into consideration. For this purpose, all offers which guarantee a load loss less than 75 kW at 100% rated load and rated voltage, rated frequency, and unity power factor, will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $4,470 per kW of reduced load loss under the above conditions for the purposes of bid evaluation.

M.2.2 DWORSHAK Dam Spare Transformer

M.2.2.1 SUBMITTAL REQUIREMENTS: Offerors shall provide the following information in its technical proposal.

a. Guaranteed Transformer Characteristics.

(1) Transformer Nameplate Data. Provide transformer nameplate data, including kVA rating, kV rating, impedance, winding diagram, and basic impulse level (BIL) ratings. The nameplate data must indicate that the proposed transformer has the following ratings: 121,500/162,000 kVA, 500 kV GrdY/288.675 kV high-voltage, 13.8 kV - 13.8 kV low-voltage, Class ONAN/ONAF cooling, 15.6 % impedance between the high-voltage winding and the low-voltage (X) windings at the low-voltage ONAN base rating of 66,750 kVA, 13.4 % impedance between the high-voltage winding and the low-voltage (Y) windings at the low-voltage ONAN base rating of 54,750 kVA, 30.1% impedance between each low-voltage winding at the ONAN base rating of 54,750 kVA,

and basic impulse level (BIL) ratings 1425 kV for the high-voltage windings, 150 kV for the high-voltage neutral winding, and 110 kV for the low-voltage windings.

(2) Load Loss. Provide evidence that load-loss in kW at the self-cooled rated kVA, when tested per Section 1*6277, paragraph 3.2* does not exceed 215 kW. If the offeror's proposed guaranteed losses are below 215 kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Dworshak Dam"* and the proposed guaranteed load losses.

(3) No-Load Loss. Provide evidence that no-load loss in kW at rated voltage, when tested per *Section 16277, paragraph 3.2* does not exceed 100 kW. If the offeror's proposed guaranteed losses are below 100 kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Dworshak Dam"* and the proposed guaranteed no-load losses.

(4) Audible Sound Level. Submit evidence that the audible sound level as measured during the design tests shall not exceed *74* dB at the ONAFrating with all fans in operatation.

b. Drawings and Descriptive Data. Provide the following information.

(1) A sketch or drawing of the proposed transformer showing outline dimensions, mounting details, location of bushings, number, location, and arrangement of coolers or radiators, location of accessories, and general appearance. The transformer sketch or drawing shall contain sufficient information to confirm that the proposed transformer conforms to existing site requirements for dimensions, location of external connections, location of accessories, and weights as shown on drawing *DWP-5.5-6.1A40/1*.

(2) Description of core construction, including lamination thickness, material, and insulation proposed.

(3) Description of oil preservation equipment proposed.

(4) Approximate weight of the complete transformer with oil, in pounds.

(5) Approximate shipping weight of heaviest part to be shipped, in pounds.

c. Experience

(1) Manufacturer's Experience. Provide documentation that demonstrates that the manufacturer of the proposed transformer has a minimum of ten (10) years experience in the design and fabrication of large generator step-up transformers, rated greater than or equal to 500 kV and 165 MVA single-phase. At a minimum the documentation shall consist of a list of previously supplied transformers and include the information contained in the following example table.

Example

Customer/ Project Name	Year Manufact-ured	Voltage	MVA Rating	Single or Three Phase	Type (GSU, auto, 3 winding, etc)
Power Company A	1980	525-13.2	145	single	GSU

Power Company B	1999	13.2-13.2-115	90/120	Three	3 winding
Etc.					

(2) Transformer Site Assembly Contractor Experience. If the transformer site assembly contractor is other than the transformer manufacturer, provide documentation that the proposed contractor has a minimum of ten (10) years experience in the site assembly and oil filling of large generator step-up transformers, rated greater than or equal to 500 kV and 165 MVA single-phase. If the transformer site assembly contractor is the same as the transformer manufacturer, this required experience documentation shall be included in the manufacturer's experience documentation.

(3) Manufacturer's Erecting Engineer. Provide documentation that demonstrates that the manufacturer's proposed erecting engineer(s) is an employee of the transformer manufacturer, has been engaged in the witnessing and directing of the field (on-site) assembly and testing of generator step-up power transformers, rated greater than or equal to 500 kV and 165 MVA single-phase as specified herein, for a minimum of five (5) years.

d. Quality Control. Provide the name of the transformer manufacturer, the location of the proposed manufacturing facility and documentation that demonstrates that the transformer manufacturing facility has current ISO 9001 Certification.

e. Past Performance. Submit a description of at least five (5) contracts for similar large generator step-up transformers performed as a prime contractor or manufacturer in the last ten years. Complete this information on the first page of the Past Performance Information included at the end of this section and submit with your offer for Past Performance. Complete Part I of the Contractor Performance Questionnaire also included at the end of this section and forward to at least 5 references and have them returned as specified on the form, "Past Performance Questionnaire". The references used for Past Performance must be among those listed in the table of Manufacturer's Experience above in paragraph M.2.2.1c(1).

f. Schedule. Provide a schedule that clearly identifies from date of notification of contract award (for proposal purposes assume award date of 1 September 2005), the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Dworshak Dam powerhouse; movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date. The schedule as included in the proposal package will become the binding contractual schedule after award.

M.2.2.2 EVALUATION METHOD

a. Guaranteed Transformer Characteristics. In order to receive a rating of acceptable the offeror must provide sufficient data to demonstrate that the transformer being proposed meets the minimum transformer characteristics identified above in Para. M.2.2.1a(1) thru (4), inclusive.

b. Drawings and Descriptive Data. To be considered acceptable for this criterion the offeror must submit transformer sketch or drawing containing sufficient data demonstrating conformance to site requirements identified on referenced drawing in Para. M.2.2.1b above.

c. Experience. The proposal will be evaluated on the documented experience of the transformer manufacturer, the transformer site assembly contractor, and the manufacturer's erecting engineer. To be considered acceptable for this criterion the offeror must provide sufficient documented experience to demonstrate compliance with the minimum requirements identified in Para. M.2.2.1c(1) thru (3), inclusive.

d. Quality Control. To be considered acceptable the name of the transformer manufacturer must be provided as well as the location of the proposed manufacturing facility and the transformer manufacturing facility must have a current ISO 9001 Certificate.

e. Past Performance. The proposal shall be rated for past performance of the prime contractor and/or transformer manufacturer. To be considered acceptable for this criterion the offeror must ensure that the Contracting Officer is in receipt of at least 5 completed Contractor Performance Questionaires (submitted by the client to the Contracting Officer) by the proposal due date, and receive ratings of Satisfactory or better for categories (1) thru (5) below for each evaluation. Note: In accordance with FAR 15.305(iv); in the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on past performance and will therefore receive a neutral rating.

(1) Transformer Workmanship
(2) Overall Customer Satisfaction
(3) Schedule
(4) Budget
(5) Satisfaction with Site Assembly work

f. Schedule. The schedule will be evaluated for compliance with the required activities and delivery dates identified in Section F, "DELIVERIES OR PERFORMANCE", and the schedule must contain the following intermediate activities: date of contract award (for schedule development purposes assume 1 September 2005; contractor shall revise schedule with actual date of contract award); the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Dworshak Dam powerhouse; movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date.

M.2.2.3 SPECIAL FACTORS FOR PRICE EVALUATION – Dworshak Dam Spare Transformer. In evaluation of price, the following will be considered:

a. The guaranteed transformer no-load losses will be taken into consideration. For this purpose, all offers which guarantee a no-load loss less than 100 kW at rated voltage and rated frequency will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $6,402 per kW of reduced no-load loss under the above conditions for the purposes of bid evaluation.

b. The guaranteed transformer load losses will be taken into consideration. For this purpose, all offers which guarantee a load loss less than 215 kW at the self-cooled kVA and rated voltage, rated frequency, and unity power factor, will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $3,883 per kW of reduced load loss under the above conditions for the purposes of bid evaluation.

M.2.3 LIBBY Dam Spare Transformer

M.2.3.1 SUBMITTAL REQUIREMENTS: Offerors shall provide the following information in its technical proposal.

a. Guaranteed Transformer Characteristics.

(1) Transformer Nameplate Data. (1) Transformer nameplate data, including kVA rating, kV rating, impedance, winding diagram, and basic impulse level (BIL) ratings.

The nameplate data must indicate that the proposed transformer has the following ratings: 192,000/256,000 kVA, *230* kV GrdY high voltage, 13.2 kV – 13.2 kV low voltage, Class ONAN/ONAF cooling, 7.6 % impedance between the high-voltage winding and each low-voltage winding at the ONAN base kVA rating, 18 % impedance between each low-voltage winding at the ONAN base kVA rating, and basic impulse level (BIL) ratings of 825 kV for the high-voltage windings, 150 kV for the high-voltage neutral winding, and 110 kV for the low-voltage windings.

(2) Load Loss. (2) Load-loss in kW at the self-cooled rated kVA, when tested per Section *16277, paragraph 3.2*. The load losses for the transformer shall not exceed 260 kW.

The load losses for the transformer shall not exceed 260 kW, at the self-cooled rated kVA. If the offeror's proposed guaranteed losses are below 260 kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Libby Dam"* and the proposed guaranteed load losses.

(3) No-Load Loss. (3) No-load loss in kW at rated voltage, when tested per *Section 16277, paragraph 3.2*. The no-load losses for the transformer shall not exceed 200 kW.

The no-load losses for the transformer shall not exceed 200 kW. If the offeror's proposed guaranteed losses are below 200 kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Libby Dam"* and the proposed guaranteed no-load losses.

(4) Audible Sound Level (4) Audible sound level. The audible sound level as measured during the design tests shall not exceed *74* dB.

The audible sound level as measured during the design tests shall not exceed 74 dB at the ONAF rating with all fans in operation.

b. Drawings and Descriptive Data The transformer sketch or drawing submitted shall contain sufficient information to confirm that the proposed transformer(s) will conform to existing site requirements for dimensions, location of external connections, location of accessories, and weights as shown on reference drawings ABM986-01 and ABM986-02.

(1) A sketch or drawing of the transformer which the offeror proposes to furnish, showing outline dimensions, mounting details, location of bushings, number, location, and arrangement of coolers or radiators, location of accessories, and general appearance. The transformer sketch or drawing shall contain sufficient information to confirm that the proposed transformer conforms to existing site requirements for dimensions, location of external connections, location of accessories, and weights as shown on reference drawings ABM986-01 and ABM986-02.

(2) Description of core construction, including lamination thickness, material, and insulation proposed.

(3) Description of oil preservation equipment proposed.

(4) Approximate weight of the complete transformer with oil, in pounds.

(5) Approximate shipping weight of heaviest part to be shipped, in pounds.

c. Experience. The proposal will be evaluated on the documented experience of the transformer manufacturer, the transformer site assembly contractor, and the manufacturer's erecting engineer.

(1) Manufacturer's Experience. Provide documentation that demonstrates that the manufacturer of the proposed transformer has a minimum of ten (10) years experience in the design and fabrication of large generator step-up transformers, rated greater than or equal to 230 kV and 250 MVA three-phase. At a minimum the documentation shall consist of a list of previously supplied transformers and include the following information contained in the following example table.

Example

Customer/ Project Name	Year Manufact-ured	Voltage	MVA Rating	Single or Three Phase	Type (GSU, auto, 3 winding, etc)
Power Company A	1980	525-13.2	145	Single	GSU
Power Company B	1999	13.2-13.2-115	90/120	Three	3 winding
Etc.					

(2) Transformer Site Assembly Contractor Experience. If the transformer site assembly contractor is other than the transformer manufacturer, provide documentation that the proposed contractor has a minimum of ten (10) years experience in the site assembly and oil filling of large generator step-up transformers, rated greater than or equal to 230 kV and 250 MVA three-phase. If the transformer site assembly contractor is the same as the transformer manufacturer, this required experience documentation shall be included in the manufacturer's experience documentation.

(3) Manufacturer's Erecting Engineer. Provide documentation that demonstrates that the manufacturer's proposed erecting engineer(s) is an employee of the transformer manufacturer, has been engaged in the witnessing and directing of the field (on-site) assembly and testing of generator step-up power transformers, rated greater than or equal to 230 kV and 250 MVA three-phase as specified herein, for a minimum of five (5) years.

d. Quality Control. Provide the name of the transformer manufacturer, the location of the proposed manufacturing facility and documentation that demonstrates that the transformer manufacturing facility has current ISO 9001 Certification.

e. Past Performance. Submit a description of at least five (5) contracts for similar large generator step-up transformers performed as a prime contractor or manufacturer in the last ten years. Complete this information on the first page of the Past Performance Information included at the end of this section and submit with your offer for Past Performance. Complete Part I of the Contractor Performance Questionnaire also included at the end of this section and forward to at least 5 references and have them returned as specified on the form, "Past Performance Questionnaire". The references used for Past Performance must be among those listed in the table of Manufacturer's Experience above in paragraph M.2.3.1c(1).

f. Schedule. Provide a schedule that clearly identifies from date of notification of contract award (for proposal purposes, assume award date of 1 September 2005), the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award);

transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Libby Dam powerhouse; movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date. The schedule as included in the proposal package will become the binding contractual schedule after award.

M.2.3.2 EVALUATION METHOD.

a. Guaranteed Transformer Characteristics. In order to receive a rating of acceptable the offeror must provide sufficient data to demonstrate that the transformer being proposed meets the minimum transformer characteristics identified above in Para. M.2.3.1 a(1) thru (4), inclusive.

b. Drawings and Descriptive Data. To be considered acceptable for this criterion the offeror must submit a transformer sketch or drawing containing sufficient data demonstrating conformance to site requirements identified on referenced drawing in Para. M.2.3.1b above.

c. Experience. The proposal will be evaluated on the documented experience of the transformer manufacturer, the transformer site assembly contractor, and the manufacturer's erecting engineer. To be considered acceptable for this criterion the offeror must provide sufficient documented experience to demonstrate compliance with the minimum requirements identified in Para. M.2.3.1c(1) thru (3), inclusive.

d. Quality Control. To be considered acceptable the name of the transformer manufacturer must be provided as well as the location of the proposed manufacturing facility and the transformer manufacturing facility must have a current ISO 9001 Certificate.

e. Past Performance. The proposal will be evaluated for past performance of the prime contractor and/or transformer manufacturer. To be considered acceptable for this criterion the offeror must ensure that the Contracting Officer is in receipt of at least 5 completed Contractor Performance Questionaires (submitted by the client to the Contracting Officer) by the proposal due date, and receive ratings of Satisfactory or better for categories (1) thru (5) below for each evaluation. Note: In accordance with FAR 15.305(iv); in the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on past performance, and will therefore receive a neutral rating.

(1) Transformer Workmanship
(2) Overall Customer Satisfaction
(3) Schedule
(4) Budget
(5) Satisfaction with Site Assembly work

f. Schedule. The schedule will be evaluated for compliance with the required activities and delivery dates identified in Section F, "DELIVERIES OR PERFORMANCE", and the schedule must contain the following intermediate activities: date of contract award (for schedule development purposes assume 1 September 2005; contractor shall revise schedule with actual date of contract award); the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Libby Dam powerhouse; movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date.

M.2.3.3 SPECIAL FACTORS FOR PRICE EVALUATION – LIBBY Dam Spare Transformer. In evaluation of price, the following will be considered:

a. The guaranteed transformer no-load losses will be taken into consideration. For this purpose, all offers which guarantee a no-load loss less than 200 kW at rated voltage and rated frequency will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $11,000 per kW of reduced no-load loss under the above conditions for the purposes of bid evaluation.

b. The guaranteed transformer load losses will be taken into consideration. For this purpose, all offers which guarantee a load loss less than 260 kW at the self-cooled rated kVA and rated voltage, rated frequency, and unity power factor, will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $8,000 per kW of reduced load loss under the above conditions for the purposes of bid evaluation.

M.2.4 LITTLE GOOSE Dam Spare Transformer

M.2.4.1 SUBMITTAL REQUIREMENTS

a. Guaranteed Transformer Characteristics.

(1) Transformer Nameplate Data. Provide transformer nameplate data, including kVA rating, kV rating, impedance, winding diagram, and basic impulse level (BIL) ratings. The nameplate data must indicate that the proposed transformer has the following ratings: 82,000/109,334 kVA, 500 kV GrdY/288.675 kV high voltage, 13.2 kV – 13.2 kV low voltage, Class ONAN/ONAF cooling, 9.4 % impedance between the high-voltage winding and each low-voltage winding at the ONAN base kVA rating, 21 % impedance between each low-voltage winding at the ONAN base kVA rating, and basic impulse level (BIL) ratings of 1425 kV for the high-voltage windings, 150 kV for the high-voltage neutral winding, and 110 kV for the low-voltage windings.

(2) Load Loss. Provide evidence that load-loss in kW at the self-cooled rated kVA, when tested per Section *16277, paragraph 3.2* does not exceed *200* kW. If the offeror's proposed guaranteed losses are below 200 kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Little Goose Dam"* and the proposed guaranteed load losses.

(3) No-Load Loss. Provide evidence that no-load loss in kW at rated voltage, when tested per Section 16277, paragraph 3.2, does not exceed 85 kW. If the offeror's proposed guaranteed losses are below 85 kW, a credit will be applied to the offeror's bids during the reverse auction process based on the $/kW value of the load losses described in *"Special Factors for Price Evaluation – Little Goose Dam"* and the proposed guaranteed no-load losses.

(4) Audible Sound Level Submit evidence that the audible sound level as measured during the design tests shall not exceed *74* dB at the ONAFwith all fans in operation.

b. Drawings and Descriptive Data. Provide the following information.

(1) A sketch or drawing of the transformer which the offeror proposes to furnish, showing outline dimensions, mounting details, location of bushings, number, location, and arrangement of coolers or radiators, location of accessories, and general appearance. The transformer sketch or drawing shall contain sufficient information to confirm that the proposed transformer conforms to existing site requirements for dimensions, location of external connections, location of accessories, and weights as shown on drawing *LGP-5.11-6-1A40/1*. LGP-5.11-6-1A4/1.

(2) Description of core construction, including lamination thickness, material, and insulation proposed.

(3) Description of oil preservation equipment proposed.

(4) Approximate weight of the complete transformer with oil, in pounds.

(5) Approximate shipping weight of heaviest part to be shipped, in pounds.

c. Experience.

(1) Manufacturer's Experience. Provide documentation that demonstrates that the manufacturer of the proposed transformer has a minimum of ten (10) years experience in the design and fabrication of large generator step-up transformers, rated greater than or equal to 500 kV and 165 MVA single-phase. At a minimum the documentation shall consist of a list of previously supplied transformers and include the following information contained in the following example table.

Example

Customer/ Project Name	Year Manufa ct-ured	Voltage	MVA Rating	Single or Three Phase	Type (GSU, auto, 3 winding, etc)
Power Company A	1980	525-13.2	145	single	GSU
Power Company B	1999	13.2-13.2-115	90/120	Three	3 winding
Etc.					

(2) Transformer Site Assembly Contractor Experience. If the transformer site assembly contractor is other than the transformer manufacturer, provide documentation that the proposed contractor has a minimum of ten (10) years experience in the site assembly and oil filling of large generator step-up transformers, rated greater than or equal to 500 kV and 165 MVA single-phase. If the transformer site assembly contractor is the same as the transformer manufacturer, this required experience documentation shall be included in the manufacturer's experience documentation.

(3) Manufacturer's Erecting Engineer. Provide documentation that demonstrates that the manufacturer's proposed erecting engineer(s) is an employee of the transformer manufacturer, has been engaged in the witnessing and directing of the field (on-site) assembly and testing of generator step-up power transformers, rated greater than or equal to 500 kV and 165 MVA single-phase as specified herein, for a minimum of five (5) years.

d. Quality Control. Provide the name of the transformer manufacturer, the location of the proposed manufacturing facility and documentation that demonstrates that the transformer manufacturing facility proposed to be used has current ISO 9001 Certification.

e. Past Performance. Submit a description of at least five (5) contracts for similar large generator step-up transformers performed as a prime contractor or manufacturer in the last ten years. Complete this information on the first page of the Past Performance Information included at the end of this section and submit with your offer for Past Performance. Complete Part I of the Contractor Performance Questionnaire also included at the end of this section and forward to at least 5 references and have them returned as

specified on the form, “Past Performance Questionnaire”. The references used for Past Performance must be among those listed in the table of Manufacturer’s Experience above in paragraph M.2.4.1c(1).

f. Schedule. Provide a schedule that clearly identifies from date of notification of contract award (for proposal purposes, assume award date of 1 September 2005), the durations required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Little Goose Dam powerhouse; movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date. The schedule as included in the proposal package will become the binding contractual schedule after award.

M.2.4.2 EVALUATION METHOD

a. Guaranteed Transformer Characteristics. In order to receive a rating of acceptable the offeror must provide sufficient data to demonstrate that the transformer being proposed meets the minimum transformer characteristics identified above in Para. M.2.4.1 a(1) thru (4), inclusive.

b. Drawings and Descriptive Data. To be considered acceptable for this criterion the offeror must submit transformer sketch or drawing containing sufficient data demonstrating conformance to site requirements identified on referenced drawing in Para. M.2.4.1b above.

c. Experience. The proposal will be evaluated on the documented experience of the transformer manufacturer, the transformer site assembly contractor, and the manufacturer’s erecting engineer. To be considered acceptable for this criterion the offeror must provide sufficient documented experience to demonstrate compliance with the minimum requirements identified in Para. M.2.4.1c(1) thru (3), inclusive.

d. Quality Control. To be considered acceptable the name of the transformer manufacturer must be provided as well as the location of the proposed manufacturing facility and the transformer manufacturing facility must have a current ISO 9001 Certificate.

e. Past Performance. The proposal will be evaluated for past performance of the prime contractor and/or transformer manufacturer. To be considered acceptable for this criterion the offeror must ensure that the Contracting Officer is in receipt of at least 5 completed Contractor Performance Questionaires (submitted by the client to the Contracting Officer) by the proposal due date, and receive ratings of Satisfactory or better for categories (1) thru (5) below for each evaluation. Note: In accordance with FAR 15.305(iv); in the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on past performance, and will therefore receive a neutral rating.

(1) Transformer Workmanship
(2) Overall Customer Satisfaction
(3) Schedule
(4) Budget
(5) Satisfaction with Site Assembly work

f. Schedule. The schedule will be evaluated for compliance with the required activities and delivery dates identified in Section F, “DELIVERIES OR PERFORMANCE”, and the schedule must contain the following intermediate activities: date of contract award (for schedule development purposes assume 1 September 2005; contractor shall revise schedule with actual date of contract award); the durations

required for transformer manufacturing including design (include design review meeting within 60 days after contract award); transformer factory acceptance test period; transformer delivery including accessories and spare parts, f.o.b. Little Goose Dam powerhouse; movement of transformer to storage location; transformer assembly; oil-filling of transformer; transformer field testing; training; O&M Manual submittals; preparation for long-term storage including performance of all required site work; contract completion date.

M.2.4.3 SPECIAL FACTORS FOR PRICE EVALUATION – Little Goose Dam Spare Transformer. In evaluation of price, the following will be considered:

a. The guaranteed transformer no-load losses will be taken into consideration. For this purpose, all offers which guarantee a no-load loss less than 85 kW at rated voltage and rated frequency will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $5,975 per kW of reduced no-load loss under the above conditions for the purposes of bid evaluation.

b. The guaranteed transformer load losses will be taken into consideration. For this purpose, all offers which guarantee a load loss less than 200 kW at the self-cooled rated kVA and rated voltage, rated frequency, and unity power factor, will be evaluated on the basis that the total bid price for each transformer will be decreased at the rate of $2,847 per kW of reduced load loss under the above conditions for the purposes of bid evaluation.

M.3 EVALUATION AND AWARD PROCEDURES

a. EVALUATION.

(1) Basis of Technical Evaluation. Technical proposals will be evaluated on an acceptable/non-acceptable basis. If the submitted technical information satisfies the minimum requirements for the criterion, that criterion will be given a rating of acceptable. Failure to demonstrate compliance with all aspects of an evaluation criterion will result in a rating of non-acceptable for that criterion. A proposal must receive a rating of acceptable for each criterion in order to receive an overall rating of acceptable. Only those proposals that receive an overall rating of acceptable will be allowed to participate in the Reverse Auction process.

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(2) Technical Evaluation Team. All technical proposals will be evaluated by a Technical Evaluation Team (TET). Pricing data will not be considered during this evaluation. Criteria for the technical evaluation are set forth above and will be the sole basis for determining the technical merit of proposals. Culmination of the technical evaluation will be assignment of a technical rating of acceptable or non-acceptable for each offer.

(3) Conformance. To be considered for award, proposals shall conform to the terms and conditions contained in the RFP and achieve a rating of “acceptable”. No proposal shall be accepted that does not address all criteria requested in this section of the solicitation or which includes stipulations or qualifying conditions unacceptable to the Government.

(4) Selection and Award Without Discussions. It is the intent of the Government to make award based upon initial offers, without further discussions or additional information. Therefore, proposals should be submitted initially on the most favorable terms from a price and technical standpoint. Do not assume you will be afforded the opportunity to clarify, discuss, or revise your proposal. If award is not made on initial offers, discussions will be conducted as described below.

(5) Competitive Range. If it is not in the Government’s best interest to make award on initial offers, the Contracting Officer may establish a competitive range of one or more offerors and

conduct discussions with those firms. When determining the competitive range, the Contracting Officer will consider the technical ratings and prices offered.

(6) Discussions. Discussions are usually conducted in writing, but may also be by telephone or in person. Discussions are tailored to each offeror's proposal and are only conducted with offeror(s) in the competitive range. The primary objective of discussions is to maximize the Government's ability to obtain the best value, based on the requirement and the evaluation criteria set forth in this solicitation. If a firm's proposal is eliminated or otherwise removed from consideration for award during discussions, no further revisions to that firm's proposal will be accepted or considered. Discussions will culminate in a request for Final Proposal Revision, the date and time of which will be common to all remaining firms.

(7) After Discussions. Revisions to the proposals submitted during discussions, if any, will be evaluated by the TET and, if warranted, an adjustment made to the rating previously assigned.

(8) Reverse Auction. Following technical evaluation, those offers that are considered to be acceptable will participate in a reverse auction to determine the lowest price, technically acceptable offer for each transformer. The Reverse Auction process is a price competition to be conducted using on-line, real time procedures on a website hosted by a third party provider using an anonymous browser based application. As required by Section L of this solicitation offerors will submit a price proposal along with their technical proposal. The prices reflected in the Schedule, Section B, for each transformer offered will be used for the offeror's Nominating Bid in the reverse auction. Each transformer will be auctioned in a separate lot. Each firm participating in the reverse auction will be notified of the date and time of the reverse auction and training will be conducted prior to the auction. The Reverse Auction portion of the acquisition will be conducted in accordance with Instructions and Training provided by the third party provider. At the conclusion of the bidding period the prices will be evaluated using the evaluation factors contained in this section; after which the acceptable proposal with the lowest evaluated price will be selected for award for each transformer.

(9) Subcontracting Plan. Large Business contractors shall submit a subcontracting plan with the price proposal for each transformer offered. The plan will be reviewed separately from the technical evaluation. If a competitive range is established, issues with the Subcontracting Plan may be included in the discussions. Within 24 hours after the conclusion of the Reverse Auction, Large Business contractors shall submit a revised Small Business Subcontracting Plan based on the results of the reverse auction, to the Contracting Officer. For a Large Business to be eligible for a contract award, its Subcontracting Plan must be acceptable to and approved by the Contracting Officer.

M.4 BASIS FOR AWARD. The Government intends to make up to 4 awards to the technically acceptable, lowest evaluated price, responsible offeror(s). The Contracting Officer reserves the right not to make award under this procedure. At the conclusion of the reverse auction the Contracting Officer will review the results of the technical evaluation and the final auction prices and determine the firm that is technically acceptable and offers lowest price to the Government.

M.5 DEBRIEFINGS.

a. Pre-Award Debriefings. Offerors excluded from the competition before award will receive a notice and may request a debriefing before award by submitting a written request for a debriefing to the Contracting Officer within three (3) days after receipt of the notice of exclusion from the competition.

b. Post-Award Debriefings. Unsuccessful Offerors shall request post-award debriefing within three (3) days after the date on which the offeror received notification of task order award. Point-by-point

comparisons with other offerors' proposals will not be made, and debriefings will not reveal any information that is not releasable under the Freedom of Information Act.

M 6. PROPOSAL EXPENSES AND PRECONTRACT COSTS. This solicitation does not commit the Government to pay any costs incurred in preparation and submission of initial and subsequent proposals or for other costs incurred prior to award of a formal contract.

M 7. RELEASE OF INFORMATION. After receipt of proposals and until contract award, source selection information will not be furnished to any firm.

END OF SECTION

SEE CONTRACTOR PERFORMANCE QUESTIONNAIRE FOLLOWI NG THIS PAGE.

PAST PERFORMANCE INFORMATION
(TO BE COMPLETED BY OFFEROR)

Offeror's Name: _____

1. Project Name and Location: _____

2. Contracting Party and Person to Contact:

   Name & Address: _____

   _____

   _____

   Telephone No: _____
   Fax. No: _____
   E-Mail Address: _____

3. Contract Name and Number _____

4. Brief Description of Project and Relevancy to this Offer _____

_____

_____

5. Load Rating of the Transformer:_____

6. Contract Dollar Value: _____

7. Status: Active _____ Complete _____

8. Date of Award: _____

   Scheduled Contract Completion Date (Including Extensions): _____

   Actual Contract Completion Date: _____

9. Work Performed as a Prime _____ or Subcontractor _____

CONTRACTOR PERFORMANCE QUESTIONNAIRE

You have been named as a reference for the contractor in 1., below, for Request for Proposal *W912DW-05-R-0009* to supply one or mo re spare generator step up transformers for Corps of Engineer hydroelectric projects in the Pacific Northwest. Please rate the contractor in 3, below, and return this questionnaire to *Sharon J Gonzalez*, U.S. Army Corps of Engineers, PO Box 3755, Seattle, WA 98124, or fax (206)764-6817, NO LATER THAN *(28 June 2005, 4:00 P.M.* PDT.

1. Contractor_____ __ Prime or __ Subcontractor

Contract Number:

_____

Description of Work:

_____

Period of Performance: _____

Contract Value: _____

Transformer Manufacturer and Ratings:_____

What was your involvement in the project? _____

_____

_____

_____

_____

2. Your Name: _____

Your Organization: _____

Your Phone Number: _____

Your Position Title: _____

3. Please provide ratings and comments below:

A. Workmanship:

__Excellent	__Good	__Satisfactory	__Marginal	__Unsatisfactory
The manufacturing of the transformer was of exceptional quality.	The manufacturing of the transformer was of high quality.	The manufacturing of the transformer was of satisfactory quality.	Problems were experienced with the manufacturing quality.	Dissatisfied with the manufacturing quality. Many problems were encountered.

Comments:_____

B. Satisfaction with the overall performance of Contractor:

__Excellent	__Good	__Satisfactory	__Marginal	__Unsatisfactory
Very happy overall with performance. Only minor problems were encountered, and contractor was very eager to correct any problems. Would highly recommend this contractor to others.	Contractor performed above average, with a minor amount of problems noted. Contractor showed initiative in resolving any problems.	Contractor performed average, with the usual number of problems noted. The Contractor showed typical enthusiasm in resolving any problems.	Not entirely happy with the contractor's performance. There were more than the usual number of problems noted. Would only recommend this contractor with reservations.	Do not recommend use of this contractor.

Comments:_____

C. Timely performance of the design, manufacturing, and installation:

__Excellent	__Good	__Satisfactory	__Marginal	__Unsatisfactory
Contractor completed the contract ahead of schedule.	Contractor met the contract schedule.	Contractor came close to meeting the contract schedule.	Contract deadlines sometimes dismissed. Attempts at regaining schedules only partly successful.	Deadlines consistently missed with no corrective actions taken by the contractor.

Comments:_____

D. The design, fabrication, and installation kept on budget:

__Excellent	__Good	__Satisfactory	__Marginal	__Unsatisfactory
Contractor found innovative ways to substantially cut costs or increase value to owner, and there were no contract modifications due to contractor problems.	Contractor completed the job under budget, and there were no contract modifications.	Contractor completed the job within, or just under budget, and there were either no or minor contract modifications.	Small cost-increasing contract modifications due to poor contractor oversight or poor planning.	Major cost-increasing contract modifications. Contractor works hard to generate extra cost modifications for profit enhancement.

Comments:_____

E. Satisfaction with the site assembly work:

__Excellent	__Good	__Satisfactory	__Marginal	__Unsatisfactory
Very happy overall with the contractor's performance. Only minor problems were noted, and contractor was very eager to correct them. Would highly recommend this contractor to others.	The contractor performed above average, with a minor amount of problems noted. Contractor showed initiative in resolving the problems.	The contractor performed average, with the usual number of problems noted. The Contractor showed typical enthusiasm in resolving the problems.	Not entirely happy with the contractor. More than the usual number of problems were noted. Would only recommend this contractor with reservations.	Do not recommend use of this contractor.

Comments:_____

ADDITIONAL COMMENTS:

_____
_____

_____
_____

_____
_____

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