

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE OF PAGES	
				J	1	7
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 26-Aug-2004	4. REQUISITION/PURCHASE REQ. NO. W68MD9-4201-7576		5. PROJECT NO.(If applicable)		
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT 4735 EAST MARGINAL WAY SOUTH SEATTLE WA 98134-2329	CODE W912DW	7. ADMINISTERED BY (If other than item 6) USA ENGINEER DISTRICT, SEATTLE ANGELA DEXTER PH: 206-764-6801 FAX: 206-764-6817 ANGELA.DEXTER@US.ARMY.MIL SEATTLE WA		CODE W912DW		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X	9A. AMENDMENT OF SOLICITATION NO. W912DW-04-Q-0157	
				X	9B. DATED (SEE ITEM 11) 25-Aug-2004	
					10A. MOD. OF CONTRACT/ORDER NO.	
					10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS						
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.						
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.						
12. ACCOUNTING AND APPROPRIATION DATA (If required)						
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.						
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).						
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
D. OTHER (Specify type of modification and authority)						
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.						
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) W912DW-04-Q-0157, PORTABLE TURBINE OIL PURIFIER AT THE LIBBY DAM, LIBBY, MONTANA  SEET ATTACHED CONTINUATION SHEET						
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.						
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
				TEL: _____ EMAIL: _____		
15B. CONTRACTOR/OFFEROR  _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED 26-Aug-2004		

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

**The following items are applicable to this modification:**

A. In line item 0001 model number HVP-903 have been revised to HVP 903-480-KP-HWN-YR 15 reflect what's in the technical specification.

B. Replace the Technical specification in its entirety with the attached technical specification, reflecting changes to model number.

**C. The closing date and time remains 31 August 2004, 09:00 a.m. Local Time.**

Encl:

Technical specification, (revised)

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## TECHNICAL SPECIFICATIONS

### LIBBY DAM PORTABLE OIL PURIFIER

#### I. Scope

26 August 2004

This specification describes the operation, application, performance and system component requirements of the oil purifier. The purifier will be used on oil-based lubrication systems and hydraulic governor control systems. The purpose of the purifier is to remove free and dissolved/emulsified water and particulate contamination from the oil. Particulate contamination and water in the oil has proven to have a deleterious impact on system components and physical properties of the oil. Industry-wide failure caused by water and particulate contamination in the lubricating and hydraulic oils have been found to be the most prevalent cause of preventable forced outages and subsequent negative impacts on unit reliability and availability.

#### II. General

The oil purifier shall be a Pall model **HVP 903-480-KP-HWN-YR15** or an approved equal. If an approved equal brand or model is supplied, **the Contractor shall provide adequate information to verify that it meets the following characteristics:**

1. The purifier shall be a portable, self-contained unit.
2. The purifier shall be provided with controls that allow unattended operation in the field with internal electrical contacts (NO or NC) for remote alarm annunciation.
3. The purifier shall have one button operation to start and stop purifier.
4. The purifier shall be painted with a high quality paint such as PPG Delta 3500 or equal.
5. The only connections the purifier shall require are a 480 volt, three phase electrical power connection and inlet and outlet oil hoses connections. Purifier shall be supplied with a means to add a future optional remote annunciation panel. There shall be no other utility (water, waste, air, etc.) connections required.
6. The method of oil dehydration and de-aeration may be the vacuum dehydration process with mass transfer. The purifier may not use high heat (>140° F) and/or high vacuum (> 24 inches of Hg). High heat (>140° F) is known to cause coking of the oil and the generation of carbonaceous fines. High vacuum (>24 inches of Hg) will strip the light ends of the oil.
7. The method employed for particulate removal shall be direct-intercept filtration, utilizing tapered pore, fixed fiber, synthetic Coreless media.
8. The purifier fluid circulation rate shall not be less than 15 GPM / 900 GPH.
9. Dry weight shall not exceed 1500 pounds, overall dimensions shall not exceed 79" high, 54" length and 31" wide excluding condenser unit.
10. The purifier shall be caster-mounted and include a push-rail to allow manual handling.
11. The purifier shall be equipped with picking eyes to facilitate moving with an overhead crane.

12. The purifier shall be equipped with forklift attachments so that unit may be transported with a forklift. Forklift attachments shall be factory installed and painted with the same paint as the purifier.
13. The inlet pressure shall operated between 25 inches Hg and 15 psig.
14. The outlet shall have a maximum pressure of 75 psig.
15. The purifier shall be capable of processing fluids with a viscosity up to ISO 250 cSt (centistokes).
16. The purifier shall have an option to install a tug draw bar and pneumatic tires.

### III. Oil Purification Performance Requirements

#### 1. Dehydration and De-aeration

The purifier shall remove 100% of free and emulsified water and gases. The purifier shall removed 80% of dissolved water, gases, and light solvents.

#### 2. Particulate Removal

The purifier shall perform particulate contamination removal with filters rated at a minimum of three micrometers with a beta ratio of  $B_2 \geq 200$  per ISO 4572 (Multi-pass filter rating using ACFTD and a beta ratio of  $B_{5(c)} \geq 1000$  per ISO 16889 (Multi-pass filter rating using ACMTD). Oil leaving the purifier shall be at an ISO cleanliness code level (ISO 4406) 15/13/11 or better.

### IV. Oil Purifier Component Requirements

#### 1. Vacuum Chamber

- a. The oil purifier's vacuum chamber shall provide purifier inlet oil flow. The vacuum chamber shall be controlled to a limit of  $22 \pm 2$  inches Hg maximum vacuum. A cleanable, 10 mesh strainer shall be provided on the oil inlet line. Inlet operating range of 15 psi to 22: hg.
- b. Fluid shall be dispersed within the vacuum chamber by a dispersion material made from a non-corrosive material. The use of replaceable dispersal elements shall not be permitted because of the cost attributable to PM labor to service the elements and disposal costs and liability.
- c. The purifier's vacuum chamber shall include low-level and high-level float valves for oil level control within the vacuum chamber and separate low-level and high-level float switches for safety shutdown of the purifier in the event that oil exceeds minimum or maximum levels. The vacuum chamber must have a minimum of four float switches for level control.
- d. Vacuum chamber inlet air shall be drawn through a filter rated at three micrometers in air. The vacuum change inlet air filter cap and shroud must be composed of non-corrosive polyamide. The air filter medium must use oleophobic resin-bonded filter fibers. The inlet air breather must be equipped with a reusable vacuum indicator to denote when air filter element is due for service. The vacuum indicator actuation pressure setting shall be 1.1 inches Hg differential.
- e. Vacuum chamber outlet air shall be discharged through a mist eliminator that automatically drains collected fluid back into the purifier.
- f. The vacuum chamber shall have a sight glass to determine chamber oil level and an inlet flow sight to gauge oil flow into the chamber.

## 2. Vacuum Pump

- a. The chamber vacuum shall be provided by an electric motor driven vane-type vacuum pump.
- b. The vacuum pump and oil discharge pump shall be driven by one 3 PH double C-face shaft, high efficiency electric motor.
- c. The vacuum pump shall include an oil bath lubricator that will maintain lubrication at all times. The oil bath reservoir shall be mounted integral to the vacuum pump. Recommended manufacturer is Reitchley.
- d. The vacuum pump outlet air stream shall be discharged through a coalescer/silencer equipped with a drain valve. The discharge coalescer/silencer is required to address OSHA oil mist emissions regulations. Emissions shall be  $<5\text{mg}/\text{m}^3$  oil mist.

## 3. Oil Discharge Pump

- a. The oil discharge pump shall be a positive displacement type rated at 15 GPM flow.
- b. The oil discharge pump shall be driven per Section IV, Vacuum Pump, Section 2, Item b.
- c. The discharge pump shall be fitted with a 75 psig full-flow rated pressure relief valve to prevent over-pressurization of the return conductors.

## 4. Oil Discharge Particulate Removal Filter and Filter Assembly

- a. The discharge filter assembly shall include a filter element, plugged-element bypass valve, and differential pressure switch. Differential pressure switch actuation shall be independent of the filter housing bypass valve. The filter assembly shall consist of two major components: The stainless steel core permanently mounted in the filter housing and the disposable Coreless filter element.
- b. The Coreless Filter element shall have O-ring seals and be composed of corrosion resistant end caps.
- c. Particulate filter element replacement shall be accomplished without tools.
- d. Filter element media shall be tapered and fixed pore design, composed of inert, inorganic fibers impregnated and bonded with an epoxy resin.
- e. The filter elements shall have an outer helical wrap bonded to each filter pleat to minimize pleat flexing and possible media damage.
- f. Filter media shall have plastic upstream and downstream support layers built into the flow channels to prevent media bind-off as pressure drop across the media increases.
- g. Filter element media shall be compatible with petroleum-based fluids per ANSI B93.23, ISO 2943. Filter element media shall be unaffected by the presence of water in the oil.
- h. The particulate filter element shall be incinerable, crushable, and lightweight.
- i. The filter element shall meet a minimum particulate removal rating (beta rating) of  $B_3 \geq 200$  per ANSI (NFPA) T3.10.8.8R and ISO 4572.
- j. The filter element shall meet a minimum removal rating (beta rating) of  $B_5 \geq 1000$  per the new ISO 16889 multi-pass filter rating.

- k. The particulate filter housing shall not exceed .4 psi pressure drop at 15 GPM with ISO 68 cSt viscous oil.
  - l. The particulate filter element clean pressure drop shall not exceed .27 psi at 15 GPM with ISO 68 cSt viscous oil.
  - m. The filter element collapse pressure rating shall be a minimum 150 psid per ISO 2941.
5. Controls and Operator Interfaces
- a. The operation of the purifier shall be monitored and sequenced by a programmable logic controller (PLC). The PLC shall monitor the oil level in the tower, condition of the outlet filter, and the status of electric motor and heater for overload and short circuit conditions. The PLC will automatically shut down the purifier if vacuum chamber levels exceed normal limits (high and low level) to ensure a constant discharge output of 15 GPM. The purifier shall be equipped with a touch-screen operator interface and initiate the purifier diagnostics alarm and help screen.
  - b. The purifier shall include a pressure switch on the vacuum pump coalescing filter to stop the discharge pump and vacuum pump if the coalescing filter is plugged. The switch will activate a display on the Eaton IDT panel mate touch-screen operator interface and initiate the purifier diagnostics alarm and help screen.
  - c. The purifier shall include an electrical differential pressure switch on the discharge filter assembly that activates a display on the Eaton IDT panel mate touch-screen operator interface if the filter becomes plugged and initiates the purifier diagnostics alarm and help screen.
  - d. The purifier shall have automatic controls that will safely shut down the system if fluid level is outside normal limits.
  - e. The purifier shall have a LCD panel that displays all alarm conditions and self-diagnosis software that provides probable cause of alarm and help screens that delineate corrective measures to rectify problem.
  - f. The purifier shall have one button operation to start and stop the purifier.
  - g. The purifier electrical controls shall be fitted in a NEMA 4 or better enclosure. The panel face shall include start/stop button, power disconnect, run light, and touch screen operator interface.
  - h. The PLC controller shall include a hour meter and display on the LCD screen that accumulates total hours on the purifier and a session timer.
  - i. The purifier shall have three panel mounted analog gauges that display oil discharge pressure, chamber vacuum, and purifier inlet oil pressure.
6. Heater
- a. The purifier shall incorporate an 18 kW heater. The heater elements shall be shielded to prevent direct contact with oil. The heater element shall not exceed a watt density of 15 watts per square inch.
  - b. The heater shall never heat the oil above 120° F.

- c. The heater shall be thermostatically controlled. A high limit thermostat on the heater shall be set at the factory. A second thermostat integral and controlled by the panel mate LCD display shall allow the operator to adjust oil temperature (heater) depending on fluid type and inlet oil temperature. Normal oil temperature during purifying operation will be 110° - 130° F and be factory set at 120° F.
- d. The heater shall have a small bypass to allow a minimum amount of flow around the heater. The bypass shall always be open during purifier operation. Oil shall not be deadheaded in the heater.

## V. Technical Support Requirements

### 1. Installation

The vendor shall evaluate the proposed installation site and work with maintenance staff for proper installation, hook-up and operation of the purifier.

### 2. Training

The vendor shall provide a one-day on-site training session on the proper operation and maintenance of the purifier.

### 3. Post Purchase Support

- a. The vendor shall be on-site for purifier commissioning. It shall be the vendor's responsibility to correct any problems attributable to the purifier.
- b. The vendor shall be responsible for validating the purifier results in terms of water and particulate removal.
- c. The vendor shall provide local technical support and answers to purifier questions in a timely manner.
- d. The purifier must have a minimum warranty of 12 months on performance, materials and workmanship.
- e. The vendor must provide three copies of operations manuals, wiring diagrams, PLC specifications and recommended spare parts.

### 4. Delivery

Delivery shall be F.O.B. to the Libby Dam Powerhouse. Libby Dam Project is on the Kootenai River 17 miles from Libby on Montana Highway 37. The Government office hours are from 7:00 am to 5:00 pm, Monday through Thursday, excluding holidays. Work at the project shall be performed during these hours. The system shall be delivered with all components installed. Delivery charges shall be included in the price of the equipment.

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