Appendix H

Magnuson Amendment Discussion

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1. INTRODUCTION AND BACKGROUND

The BP Cherry Point facility, previously owned and operated by Atlantic Richfield Company (ARCO), was built in 1971 as a petroleum refinery and marine terminal. Although the Department of the Army (DA) Section 10 permit (NWS-1992-00435) issued by the U.S. Army Corps of Engineers (USACE) in 1969 authorized ARCO to construct a two-wing (North Wing and South Wing) marine terminal, only the South Wing was constructed and was placed in operation in 1971. The South Wing consists of a single ship berth connected to the shore by a trestle that includes a causeway and pipelines for transfer of crude oil and refined petroleum products between the dock and the refinery. The South Wing was used for both unloading of crude oil and loading of refined petroleum products. In addition to marine transportation, ARCO used the Olympic pipeline to transport product from the refinery. In 1977, ARCO requested re-issuance of the 1969 DA Section 10 permit to allow for construction of the North Wing, as originally permitted. This request was withdrawn and a new application was submitted in 1992 for construction of the North Wing. On March 1, 1996, ARCO obtained the DA Section 10 permit to construct the North Wing.

In April 2000, BP West Coast Products, LLC (BP) purchased the ARCO refinery and marine terminal (dock**).** On June 19, 2000, a 1-year time extension of the DA permit was granted to ARCO to complete construction of the North Wing. Construction of the North Wing was completed in 2001, and it went into service in September 2001. Both wings are currently in operation. The North Wing is dedicated to loading and occasional unloading of refined petroleum products, and the South Wing is used primarily for unloading crude oil and the occasional loading of refined petroleum products when vessel loading requirements are better met by use of the equipment on the South Wing. Figure 2-2 on page 2-3 of the Draft Environmental Impact Statement (EIS) illustrates the BP Cherry Point dock configuration.

In November 2000, Ocean Advocates filed a lawsuit in the U.S. District Court challenging the issuance of the 1996 DA permit. The District Court ruled in favor of the USACE's finding that an EIS was not required and the DA permit issued did not violate the Magnuson Amendment (33 U.S. Code [USC] 476). Ocean Advocates filed an appeal at the U.S. Court of Appeals for the Ninth Circuit (9th Circuit Court). As part of its ruling in Ocean Advocates v. U.S. Army Corps of Engineers, 402 F. 3d 846 (9th Cir. 2005), the 9th Circuit Court required the USACE to reevaluate the dock extension's (the North Wing) potential violation of the Magnuson Amendment (33 USC 476[b]).

The Magnuson Amendment provides, in relevant part:

> *Notwithstanding any other provision of law, on and after October 18, 1977, no officer, employee, or other official of the Federal Government shall, or shall have authority to, issue, renew, grant, or otherwise approve any permit, license, or other authority for constructing, renovating, modifying, or otherwise altering a terminal, dock, or other facility in, on, or immediately adjacent to, or affecting the navigable waters of Puget Sound, or any other navigable waters in the State of Washington east of Port Angeles, which will or may result in any increase in the volume of crude oil capable of being handled at any such facility (measured as of October 18, 1977), other than oil to be refined for consumption in the State of Washington.*

Congress's stated purpose in adopting the Magnuson Amendment was to restrict crude oil "tanker traffic in Puget Sound." Thus, if the Amendment applies to a particular request for a federal permit, license, or other authority, the pertinent inquiry is whether the proposed action "will or may result in any increase in the volume of crude oil capable of being handled" at the marine facility in question, beyond the amount of crude oil the facility was capable of handling as of October 18, 1977.

In Ocean Advocates v. U.S. Army Corps of Engineers, the 9th Circuit Court had interpreted that, in analyzing capacity, one should not look to the capacity of the refinery, but rather to the capacity of the terminal. In evaluating whether the permit issued in 1996 may have resulted in any increase in the volume of crude oil capable of being handled at the BP Cherry Point dock, the 9th Circuit Court asked for a determination on the following three questions:

(1) Is it physically possible for the new platform to handle crude oil today?

(2) Is it physically possible to modify the new platform such that it could handle crude oil, without requiring additional permitting?

(3) Did the modifications authorized by the permit increase the potential berthing capacity of the terminal for tankers carrying crude oil?

These questions are discussed in sequential order below.

2. Is it physically possible for the new platform (North Wing) to handle crude oil today?

2.1 North Wing's Capability to Handle Crude Oil

The North Wing was designed and constructed specifically to handle only loading and unloading of refined petroleum products. The North Wing has no crude oil unloading arms, only refined petroleum product loading arms. These refined petroleum product loading arms are too short to offload crude oil from crude tankers that call at the terminal. All pipeline sizes on the North Wing are specific to lines that service refined petroleum products and are connected to refined petroleum product tanks and associated pumps as well as headers that are exclusive to refined petroleum product service. Various refined petroleum product pipelines that lead to the North Wing originate from refined petroleum product tanks designed and/or permitted for specific refined petroleum product types. These pipelines feed into a common manifold located on the North Wing, where a series of valves and pipes that compose the header allow the Storage and Handling Technicians to direct refined petroleum products into a specific loading arm(s) on the North Wing planned for loading that specific product to a vessel. Loading arms are not designed or designated for specific refined petroleum products—any refined petroleum product may be loaded through any loading arm other than the vapor arm, which is used exclusively to capture vapors displaced from tankage and route them to the vapor combustor located on the North Wing.

To ensure product quality from one product loading to the next, it is standard industry practice to flush the refined petroleum product line, header, and loading arm with the next refined petroleum product to be loaded. Flush volumes typically range from 1,500 to 4,300 barrels (bbl), depending on the previous product loaded, the following product, and how much flush volume of the following product is required to ensure that the product, when loaded, will meet all quality assurance parameters in the shipboard product tank. This off-specification flush material is routed through the 6-inch Flush Line, which connects the North Wing manifold to the existing 30-inch-diameter crude Marine Line that runs from the South Wing up to the crude oil tankage (onshore), allowing the flush material to be recycled.

The Flush Line is an industry-standard design requirement and can be found on virtually all modern marine transfer facilities that load multiple products, which are subject to the requirements under 33 Code of Federal Regulations (CFR) § 154. The Flush Line configuration serves two key purposes to ensure safe and compliant operation of the marine terminal and refinery: (1) the Flush Line ensures product safety and quality from load to load; and (2) the Flush Line allows the flushed material to be sent back to crude tankage for re-processing. The Flush Line is used exclusively for transporting the volume of two

different refined petroleum products that mix in the pipeline when switching from loading of one type of product to loading of another type of product. This volume of mixed products is returned to the refinery for recycling through the Flush Line.

Because the 6-inch Flush Line on the North Wing connects the North Wing manifold to the 30-inch crude oil Marine Line, the Flush Line theoretically could be used to transfer crude oil to the crude tankage. However, this theoretical application is not possible because the loading arms on the North Wing are designed to load refined petroleum product only and do not have the sufficient size and height to connect to crude oil tankers. In addition, the flow rate of the 6-inch Flush Line would make this theoretical crude oil transfer commercially unsustainable and would disrupt the normal, approved, safe operation of the North Wing. Offloading crude oil from a tank vessel through the 6-inch Flush Line would take approximately 180 hours or 7.5 days, making the North Wing unavailable to load refined petroleum product during that entire period.

The 30-inch crude oil Marine Line exclusively services the South Wing and does not extend to the North Wing. When the North Wing was designed and constructed, tie-ins were designed allowing the refined petroleum product lines that extended down the main causeway and to the existing South Wing to branch off and to continue on to the North Wing. No such tie-in was designed or installed for the 30-inch-diameter crude oil Marine Line to service the North Wing, and no crude oil offloading arms were specified or installed on the North Wing. The North Wing has no capability to handle crude oil today (BP 2013).

2.2 South Wing's Capability to Handle Crude Oil

The current South Wing was designed and constructed to handle both crude oil and refined petroleum products at a single berth. Pipelines connect the South Wing to both the refinery's crude oil storage tanks and the refined petroleum products storage tanks. The South Wing has both crude oil tanker unloading arms and refined petroleum product loading arms. The South Wing's 30-inch Marine Line can offload a crude tanker in about 24 hours. At its current production rate, the refinery requires a tanker load of crude oil approximately every 3.5 days. The South Wing's capability to handle crude oil has not changed since its construction in 1971.

3. Is it physically possible to modify the new platform (North Wing) such that it could handle crude oil without requiring additional permitting?

The USACE conducted a site visit of the BP Cherry Point dock on August 7, 2007. The USACE project manager toured the North Wing to better understand how the North Wing operates in relation to South Wing. The USACE also requested BP provide a detailed description of the North Wing, its operation, and what modifications to the North Wing would be needed to unload crude oil (BP 2013).

Based on the existing design and construction of the North Wing, including the lack of crude oil unloading arms and the existing Flush Line (with a pipe diameter of 6 inches), the North Wing cannot handle the volume of crude oil needed by the refinery for production. To use the existing Flush Line, new crude oil unloading arms and a new connection to the existing Flush Line would be required to offload crude oil from a tank vessel. Furthermore, offloading crude oil through the 6-inch Flush Line would take approximately 180 hours or 7.5 days. The use of the Flush Line to unload crude oil would prevent loading of refined petroleum products at the North Wing during this period.

To modify the North Wing to allow unloading crude oil would require extensive modification of the piping configuration from the "Y"-shaped area to the North Wing in order to unload crude oil at a rate similar to the South Wing's rate. The "Y" shaped area is where the North and South Wings split off from

the main causeway. A new tie-in from the existing 30-inch-diameter crude oil Marine Line to the North Wing would be required. A new 30-inch line would need to be installed through the "Y" area and added to the existing pipe rack on the North Wing causeway to the North Wing loading platform. Taller and larger diameter crude oil loading arms would need to be installed on the North Wing loading platform. In addition, modifications to the manifold and piping configuration on the North Wing loading platform would be required to allow routing of crude oil from the 30-inch crude oil Marine Line to any new crude oil loading arms.

The modifications described above would require authorization by the USACE and other regulatory agencies. A DA permit modification from the USACE is required for a change in the usage of the North Wing (from handling refined petroleum products only to handling both crude oil and refined petroleum products), for installation of new crude oil loading arms, and adding a new 30-inch crude oil pipeline from the "Y" area to new crude oil loading arms on the North Wing and tie-in from the Marine Line to the North Wing. See 33 CFR § 325.7.

4. Did the modifications authorized by the permit increase the potential berthing capacity of the terminal for tankers carrying crude oil?

4.1 Berthing Capacity of the North Wing

The North Wing has a single berth and loading arms designed to handle loading of refined petroleum products. The North Wing became operational in 2001. A review of Table 2- 1, *Monthly and Annual Vessel Calls at BP Cherry Point Dock (1998–2010)* [Draft EIS page 2-11]; Table 2-2, *Total Annual Material Transfer at BP Cherry Point Dock (1998–2010)(bbl)* [Draft EIS page 2-12]; and Table 2-3, *Annual Volume and Vessel Calls at BP Cherry Point Dock (1998–2010) Compared to 1998-2010 Average Values* [Draft EIS page 2-13] shows that the amount of refined petroleum products and number of vessels serviced at the North Wing varies from year to year. The lowest volume of refined petroleum product loaded occurred in 2004; a total of 25,404,183 bbl were loaded on 150 vessels. The highest volume of refined petroleum product loaded occurred in 2007, when a total of 37,787,207 bbl were loaded on 225 vessels. Since the North Wing became operational, the average number of calls per year is 176 refined petroleum products vessels (for the period from 2002 to 2010). Refined petroleum products also are transported by pipeline, truck, and train from the refinery. The North Wing's maximum annual capacity for unloading crude oil cannot be calculated, because the North Wing cannot handle unloading of crude oil. The North Wing has reduced utilization of the South Wing for loading refined petroleum products (BP 2011).

4.2 Berthing Capacity of the South Wing

From 1971 to April 2001, the South Wing handled both crude oil unloading and refined petroleum product loading. Historical utilization of the South Wing for unloading crude oil vessels varied from a low of 100 crude oil vessels in 1991 to a high of 125 crude oil vessels in 1996 (see Table 1 below). In June 1999, a section of the Olympic Pipeline ruptured, and deliveries of refined petroleum product by pipeline were disrupted. The pipeline was out of service from June 1999 to April 2001. During this period from June 1999 to April 2001, loading of refined petroleum product increased at the South Wing. A total of 303 vessels used the South Wing in 2000, including loading of 195 refined petroleum product vessels and unloading of 108 crude oil vessels.

The maximum capacity of the South Wing is presented in Table 2-4, *Calculation of Maximum Single-Wing Dock Capacity for the BP Cherry Point Dock* (Draft EIS page 2-15) and is discussed in Section 2.2.9, *Maximum Dock Capacity of the South Wing* (Draft EIS page 2-15) of the Draft EIS.

The most accurate measurement of berthing capacity at the South Wing is hours that the berth is available for vessel operations. Berth availability allows for an accurate measure of capacity, including known and demonstrated values for parameters that preclude dock availability, while excluding those variables that are cargo- or vessel-specific, such as vessel size, cargo size, and pumping rate. Factors that reduce dock availability, and thus berthing capacity, are based on historical averages which show that the berth is not available 2.1 days per year due to weather restrictions and that the berth is not available 5.5 days per year due to regulatory requirements for annual pressure testing of the dock lines and mechanical availability. When averaged across the year, and then translated into meaningful availability measures, these data reflect that the maximum berthing capacity of the South Wing is 23.5 hours per day. Based on assumptions shown in Table 2-4 of the Draft EIS, the annual capacity of the South Wing for both refined petroleum product and crude oil vessels is 335 calls. This annual capacity includes adequate time for all of the normal elements of operation required for continued dock availability and safe and effective operation for unloading crude oil and loading refined petroleum products.

Using the same assumptions shown in Table 2-4 of the Draft EIS, the maximum annual capacity of the South Wing for crude oil vessels only can be calculated, as follows.

Dock Time Available for Operations
8,760 hours per year total time
- 132 hours dock out of service for maintenance (5.5 days)
- 50.4 hours dock out of service for weather (2.1 days)
= 8,577.6 hours per year dock available

Dock Time Required per Vessel Call
5.2 hours – Maneuvering, docking and departure
+22.06 hours – Average crude oil unloading time (620,000 bbl average cargo size divided by 28,100 bbl per hour unloading rate = 22.06 hours.)
= 27.26 hours/call

The calculation above was used to determine the maximum number of crude oil vessel calls that could be served at the South Wing: 8,577.6 hours dock available divided by 27.26 hours per vessel call = 314.66 calls of crude oil vessels.

Based on the above calculation, up to 315 crude oil vessel calls per year could occur at the South Wing. Actual berth utilization of the South Wing is expected to be well below the calculated 315 crude oil vessel calls per year. Between 2002 and 2010, after the North Wing became operational, the number of crude oil vessel calls at the South Wing ranged between 140 and 191 vessels per year. The annual crude oil vessel calls at the South Wing have been well below the annual berthing capacity of 315 calls per year for crude oil vessels only and below the annual berthing capacity of 335 vessels per year for both crude oil and refined petroleum product vessels.

The refinery production rate has been stable at 225,000 bbl per day, or 82,125,000 bbl per year, for the period from 2001 through 2010 (EIS page 2-12). If the entire year of crude oil was delivered by ship with an average cargo volume of 624,626 bbl, 131 vessels per year would be required to deliver 82,125,000 bbl per year. The refinery also receives crude oil deliveries by pipeline and will begin receiving deliveries by train in the near future; these other modes of crude oil deliveries would reduce the volume of crude oil delivered to the refinery over the South Wing.

Table 1 shows the number of crude oil vessel calls that occurred at the South Wing from 1990 to 2010 and the annual volume of crude oil unloaded. The overall annual volume of crude oil unloaded at the South Wing remained within a range of 60,721,943 to 76,431,762 bbl per year over this 20-year period.

In 2007, a total of 191 vessels called at the South Wing and unloaded a total volume of 71,840,417 bbl of crude oil. This is the highest number of crude oil vessel calls to occur at the South Wing in the 20-year period. It is important to note that the total volume of crude oil unloaded in 2007 is less than the total volume unloaded in 1997. In 1997, a total volume of 75,591,500 bbl of crude oil was unloaded from 107 vessels. The comparison of the number of crude vessels and amount of crude oil unloaded over the past 9 years (2002 through 2010) shows a trend to smaller volume crude oil cargoes per vessel being unloaded. This trend to smaller volumes being unloaded has resulted in the increase in the total number of crude oil vessels calling at the South Wing during this period.

Table 1. Annual Crude Oil Vessels/Crude Oil Volume at South Wing from 1990 through 2010

Year	Annual Crude Oil Vessels	Crude Oil Volume (barrels)
1990	108	61,028,000
1991	100	63,692,500
1992	111	68,839,000
1993	112	68,948,500
1994	114	66,685,500
1995	123	73,328,500
1996	125	72,671,500
1997	107	75,591,500
1998	114	71,207,327
1999	110	60,721,943
2000	108	64,624,712
2001	119	70,976,481
2002	140	71,495,998
2003	165	72,991,103
2004	137	68,749,545
2005	143	62,368,592
2006	141	74,346,487
2007	191	71,840,417
2008	188	76,431,762
2009	162	71,153,897
2010	174	64,215,057

Sources: 1990 – 1997 data, ARCO May 2000;
1998 – 2010 data, BP 2011.

5. Volume of Crude Oil Handled at South Wing

The South Wing has not been modified since its construction in 1971. Therefore, its handling capacity for crude oil has not changed. Figure 1 is a graph showing the barrels of crude oil per year unloaded at the South Wing from 1990 to 2010. The amount of crude oil unloaded varies from a low of 61,028,000 bbl to a high of 76,431,762 bbl. The average volume of crude oil that moved across the South Wing was 69,138,491 bbl for the period from 1990 to 2010. A review of the information in Table 2-1, *Monthly and Annual Vessel Calls at BP Cherry Point Dock (1998–2010)* [page 2-11 of the Draft EIS] and Table 2-3, *Annual Volume and Vessel Calls at BP Cherry Point Dock (1998–2010) Compared to 1998–2010 Average Values* [pages 2-13 and 2-14 of the Draft EIS] shows that the average cargo size of crude oil has declined from 624,626 bbl in 1998 to 369,052 bbl in 2010. The overall average cargo size for the entire period was 474,776 bbl, indicating that crude oil cargo size has declined while the refinery production has been stable at approximately 225,000 bbl per day for the period from 2001 through 2010. Fully loaded crude oil vessels are arriving at the South Wing, but only a portion of the overall cargo is

unloaded at the South Wing. Some of these crude oil vessels continue to other refineries located in the general area. Figure 1 shows that crude oil volumes have remained within the same range from 1990 to 2010.

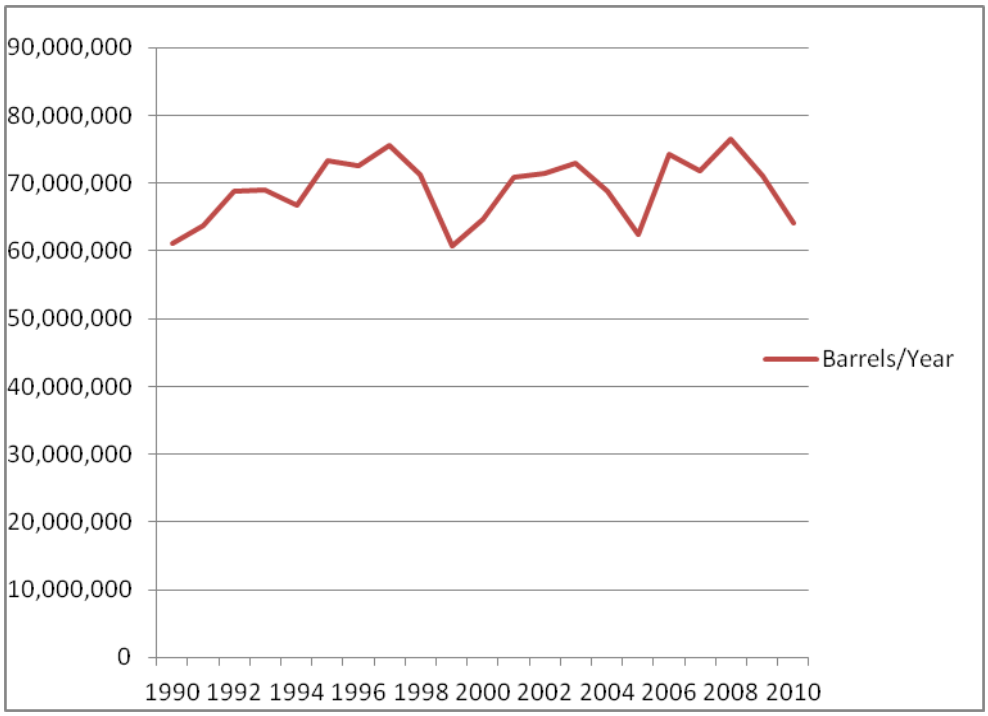

Figure 1. Annual Crude Oil Volumes from 1990 through 2010

Figure 2 is a graph that compares the barrels of crude oil per year (in million barrels) unloaded at the BP Cherry Point dock and the number of calls per year at the South Wing from 1990 to 2010. This graph shows that the volume of crude oil per year has remained within the same range over the past 20 years while the number of vessel calls per year has increased, beginning in 2001.

In 1998, the average monthly number of crude oil vessel calls was 9.5; in 2010, the average monthly number of crude oil vessel calls was 14.5. However, the volume of crude oil received by the BP Cherry Point dock from 1998 through 2010 remained relatively consistent, with an average of 69,317,256 bbl annually both before and after construction of the North Wing. It appears that starting in 2002 the number of vessels delivering crude oil to the South Wing increased, but the average load of the crude oil vessels has declined from 624,626 bbl in 1998 to approximately 369,052 bbl in 2010 (EIS Chapter 2). BP indicated that this change is a result of the refinery's declining reliance on Alaska North Slope (ANS) crude oil. The increase in number of vessels and decrease in cargo size is attributed to the declining ANS crude production, the historical source of crude oil for the Cherry Point Refinery, and the associated change in crude oil sourcing strategy brought about by the purchase of the Refinery by BP in April 2000. In 1977, with the completion of the Trans-Alaska Pipeline System, the Cherry Point Refinery began operating on 100 percent ANS crude. In 2014, BP anticipates that ANS will constitute less than 40 percent of the Refinery's crude deliveries (BP 2014).

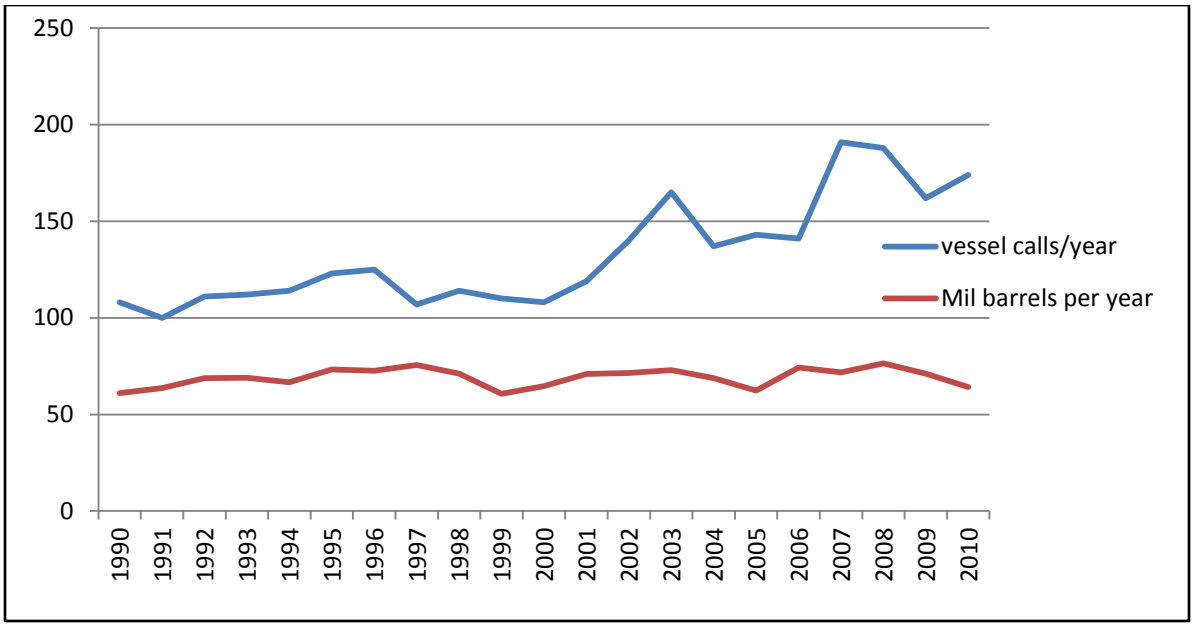

Figure 2. Comparison of Annual Vessel Calls to Annual Crude Oil Volume

The BP Cherry Point Refinery operates most efficiently on a crude oil feedstock that is very similar chemically to ANS crude. Due to the decline in ANS production and the increase in ANS prices relative to other available crude oil, BP chose to augment ANS deliveries with a variety of domestic crude oil, including North Dakota crude, Canada tar sands oil, and internationally sourced crude. These varieties of crude oil, when combined for processing, yield a range of refined petroleum products very similar to ANS. BP has chosen this strategy of using various sources of crude oils and maintaining the complex management of storage tank contents and volumes, in lieu of building additional crude oil storage tanks. The use of this business strategy has resulted in an increase in the average annual number of crude oil vessel calls and a decrease in the average cargo volume per crude oil delivery since 2002.

6. Legal Restriction That Limits the Crude Oil Capability of the North Wing

According to 33 CFR § 320.2(b), Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized obstruction or alteration of any navigable water of the United States; furthermore, construction of any structure in or over any navigable water of the United States requires a permit from the USACE. The March 1996 permit issued to ARCO (predecessor to BP) was granted under this authority. The USACE has the authority to re-evaluate the circumstances and conditions of any permit and initiate action to modify, suspend, or revoke a permit as may be necessary by considerations of the public interest. See 33 CFR § 325.7. As stated in the EIS, under the Proposed Action, the USACE would modify the DA permit for continued operation and maintenance of the dock, with the added condition that the North Wing could not be used for unloading or loading crude oil. If at a later date BP wishes to make any change to the operations of the North Wing or change to the piping configuration or equipment on that wing, BP would be required to submit a permit application to seek DA approval for such changes. The USACE would process such a request for permit modification, including an evaluation of the proposed modification with respect to requirements of the Magnuson Amendment.

7. Crude Oil Refined for Consumption in the State of Washington

Analysis of product shipment data by BP for the period from January 1, 2007, through December 31, 2012—the only time period for which data are available,[1] indicates that approximately 26 percent of the crude oil delivered to the BP Cherry Point dock during this period was refined for consumption in Washington State (BP 2013).

This analysis of crude oil delivered to the BP Cherry Point dock for consumption within Washington State is based on an extrapolation from product delivery data during the identified time frame. Product placement over any given time period is driven by market forces and is not a reflection of any limitation of the terminal where crude oil is delivered. Under different market conditions, up to 100 percent of the crude oil delivered to the BP Cherry Point Refinery could be refined for consumption in Washington State.

8. Literature Cited

ARCO. 2000. Annual Crude Oil Vessels/Crude Oil Volume at South Wing from 1990 through 1997. May.

BP. 2011. Updated Response to USACE Data Requests 3a and 3b. August 18, 2011.

BP. 2013. Response to USACE Magnuson Evaluation Data Request Items 9 and 10. October 26, 2013.

BP. 2014. Email from Scott McCreery (BP) to Olivia Romano (USACE) regarding crude vessel numbers. January 15, 2014.

[1] BP's ability to access the Cherry Point Refinery data before 2007 has become difficult due to a change in accounting tools that has resulted in older data being incompatible with newer software.

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