

Statement of Basis for Vigor Shipyards, Inc.

Air Operating Permit No. 12539

Administrative Amendment, January 3, 2018

1. Purpose of the Statement of Basis

This document summarizes the legal and factual bases for the permit conditions in the air operating permit to be issued to the Vigor Shipyards, Inc. (Vigor) under the authority of the Washington Clean Air Act, Chapter 70.94 Revised Code of Washington (RCW), Chapter 173-401 of the Washington Administrative Code (WAC), and Puget Sound Clean Air Agency (Agency) Regulation I, Article 7. Unlike the permit, this document is not legally enforceable. It includes references to the applicable statutory or regulatory provisions that relate to Vigor air emissions and provides a description of Vigor's activities, including a compliance history.

2. Source Description

Vigor is a full service shipyard specializing in commercial and military vessel repair, overhaul and construction. It is located on the northwest corner of Harbor Island in Seattle, Washington at the intersection of 16th Avenue Southwest and Southwest Florida Street and is accessed from Seattle via South Spokane Street. The facility is approximately 23 acres in size, not including pier areas. Vigor's northern shoreline is surrounded by water from Elliot Bay while its western shoreline is bordered by the Duwamish River. This shipyard has occupied the present facility, or portions of the present facility, since June 1918. Harbor Island was created before 1905 by filling the tide flats and delta deposits with demolition debris or dredged material from the east and west waterways of the Duwamish river.

The shipyard consists of three dry docks and associated piers located on the north end of Harbor Island, two shipways located in the southwest portion of the facility off the West Waterway of the Duwamish River, and nine wet moorage berths located adjacent to the shipyard's piers. The piers consist of Pier 3 located at the west side of the yard, Pier 4 located at the northwest corner of the yard, and Piers 5 and 6, located on the north side of the yard. Pier 4 supports Dry dock #1. Pier 5 supports Dry dock #10. Currently Pier 3 supports Dry dock #3. The shipway in the southwest side and Piers 1 and 1A are no longer in service and will be decommissioned in order to build an intertidal salmon estuary.

Repair and overhaul services are mainly performed on vessels with hulls constructed of steel. Services include electrical, mechanical, carpentry, steel fabrication, pipe-fitting, painting, abrasive grit blasting and pressure washing. Operational facilities include shops for abrasive grit blasting, painting, pipe fabrication, carpentry, welding, machining, plate bending, and electrical work. Support facilities include storage and warehouse buildings; sheds for compressors, heating and power plants, and tools; administrative offices; first aid office; and fuel storage.

Vigor has three dry docks that can be used. Dry docks are currently identified as Dry dock #1 ("Vigilant"), "Dry Dock #3", and "Dry Dock #10". Dry dock #1 is a steel dry dock located on the northwest corner of the property. It is 598 feet long, 87 feet wide and can hold up to 17,500 tons. Dry dock #3 is 400 feet long, 137 feet wide and can hold up to

20,000 tons. Dry dock #1 is owned by the Navy and operated by Vigor. The addition of new piers or dry docks or modifications that would increase air pollutant emissions from activities that take place on the pier or dry dock (spray coating, abrasive blasting) would potentially trigger Notice of Construction permitting requirements in Regulation I, Article 6.

More than 35% of the vessels hauled out (dry docked) require partial or complete hull blasting, accounting for 80% of the grit used. About 10% is used in the abrasive blast shed on shore. The remaining 10% is used in ship holds and ship superstructures. Spent grit is removed from the dry docks prior to launching a vessel. Spent grit is stored in a covered area prior to being hauled to Lafarge Cement for re-use in the manufacture of cement.

Vigor applies paint to nearly every vessel it services. The primary types of paint used are solvent based epoxy paints, solvent based non-epoxy paints, solvent based zinc paints, and solvent based anti-fouling paints. Painting operations occur both indoors and outdoors at the shipyard. Vessel components small enough to be moved or separated from a vessel can be painted indoors in one of several "paint shops". Vessel painting occurs outdoors when the vessels are in dry dock (below water line work and superstructure painting) or are berthed adjacent to one of the shipyard's piers (superstructure and above water line painting). The majority of air emissions from the shipyard originate from painting operations. Vigor uses VOC compliant paints per Shipbuilding and Repair NESHAPS. [40 CFR part 63 Subpart II].

Vigor qualifies as a major source and is required to obtain an air operating permit because potential emissions of volatile organic compounds (VOCs) and Hazardous Air Pollutants (HAPs) exceed the major source thresholds of 100 tons per year and 25 tons per year, respectively. The major sources of emissions are from the use of solvents and coatings used to support cleaning and coating operations associated with ship building and repair.

3. Review of Permit Application

3.1 Original Application

An air operating permit application was received by the Agency from Todd Pacific Shipyards on May 4, 2000. Prior to that time, Todd Pacific Shipyards was operating under a synthetic minor permit which limited their VOC and HAP emissions below major source thresholds. The Agency acknowledged that the application was complete in a letter to Todd Pacific Shipyards dated June 19, 2000. The original permit was issued on February 4, 2003.

3.2 Administrative Amendment

An administrative amendment was issued on June 13, 2011 due to a name change from Todd Pacific Shipyards to Vigor. Certain underlying documents referred to in the operating permit, such as Orders of Approval, have not been reopened to change the name of the company, but any terms and conditions in those documents that applied to Todd Pacific Shipyards now apply in exactly the same manner to Vigor.

3.3 Operating Permit Renewal

An air operating permit renewal application was received by the Agency from Vigor on February 5, 2007. The Agency acknowledged that the application was complete in a letter to Vigor dated April 3, 2007.

3.4 Administrative Amendment

An administrative amendment was issued on January 3, 2018 to reflect a change in one of the responsible officials to Mike Pearson.

4. Notice of Construction History

Since the issuance of the original operating permit, the Agency has reviewed several proposed projects to determine if a Notice of Construction (NOC) Order of Approval would be required. A summary of the results of each evaluation is provided below:

- NOC Order of Approval No. 9226 was issued on February 28, 2006 for installation of a soil and groundwater remediation system that uses a vacuum enhanced recovery system and vacuum blower that routes all emissions through a catalytic oxidizer. The duration of the project was limited to 5 years.

NOC Order of Approval No. 9832 was issued on April 23, 2008 to remove the expiration date in Order of Approval No. 7253 (groundwater remediation including air stripper and soil vapor extraction system with extracted vapors controlled by a thermal oxidizer). This new Order cancelled and superseded Order of Approval No. 7253 dated April 5, 2002.

Both of these Orders were cancelled and superseded by NOC Order of Approval No. 10110. It was issued on August 16, 2010. This Order was issued to address changes to the groundwater system by both of the previous Orders. This Order was in turn cancelled and superseded by NOC Order of Approval No. 10296 which was issued on March 17, 2011. The West Shed catalytic oxidizer was replaced due to equipment failure. Order of Approval No. 10296 cancelled and superseded Order of Approval No. 10110 dated August 16, 2010.

- On April 26, 2005, an application was submitted for a sponge-jet abrasive blasting operation to be conducted in an existing building employing existing dust collectors that had been previously approved under Order of Approval No. 2452. The Agency determined that a new NOC Order of Approval was not required for the abrasive blasting media change as long as the existing controls are left in place.
- Order of Approval No. 9541 was issued on April 5, 2007. Part of the Building T-72 was established as an abrasive blasting and spray coating facility to replace outdoor abrasive blasting and spray coating activities that took place on the Building Ways (one of four outdoor spray coating areas approved under Order of Approval No. 8678). This Order permitted eight new dust collectors/filtered exhausts which were intended to better capture abrasive blasting dust and paint spray from the currently permitted outdoor operations. The Order also covers operations in one existing spray coating booth (T-199, Paint Shop #3) and one existing spray coating room (T-230, Shop #2). The spray booth and room were previously permitted but conditions from those Orders were pulled into Order of

Approval No. 9541, since this new Order cancelled and superseded Order of Approval No. 8678 dated June 10, 2002 (which in turn had cancelled and superseded Orders of Approval No. 5671, 7069 and 7070). NOC Order of Approval No. 9621 was issued on June 22, 2007 and also permits abrasive blasting and spray painting in Building T-72 (similar to Order of Approval No. 9541). Additional filtered ventilation was added at the request of the Seattle Fire Department as they preferred the improved system over the six portable exhausts from the original permit. Conditions are similar, but not identical to those in Order of Approval No. 9541. Conditions in both Orders remain in effect.

- Order of Approval No. 10267 was issued November 17, 2015. The Order modified existing temporary dry abrasive blasting and existing temporary spray coating operations by providing flexibility on the location within the shipyard where these operations are conducted as long as the requirements in this Order are met. Existing temporary spray coating operations on dry docks and vessels pier-side are not addressed in this Order of Approval, but must meet the requirements in Agency regulations. This Order also incorporated permit conditions that applied to existing indoor spray coating operations previously permitted under Order of Approval 9541 dated April 5, 2007 (no modification to these operations). This Order cancels and supersedes Order of Approval No. 9541 dated April 5, 2007 and Order of Approval 8678 dated June 10, 2002.

5. Compliance Assurance Monitoring

The CAM rule requires owners and operators to monitor the operation and maintenance of their control equipment so that they can evaluate the performance of their control devices and report whether or not their facilities meet established emission standards. If owners and operators of these facilities find that their control equipment is not working properly, the CAM rule requires them to take action to correct any malfunctions and to report such instances to the appropriate enforcement agency. Additionally, the CAM rule provides some enforcement tools that will help State and local environmental agencies require facilities to respond appropriately to the monitoring results and improve pollution control operations.

The CAM rule applies at major sources with emission units that have control devices, and where emissions from the emission unit could exceed 100 tons per year if the control device was not operated. In accordance with 40 CFR Part 64, any emission unit that meets all three of the following criteria requires a CAM Plan:

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitations or standard exempt under 40 CFR 64.2(b)(1). [40 CFR 64.2(a)(1)]
- The unit uses a control device to achieve compliance with any such emission limitation or standard. [40 CFR 64.2(a)(2)]
- The unit has potential pre-control device emissions of the applicable pollutant of at least 100% of the major source amount. [40 CFR 64.2(a)(3)].

Exemptions in 40 CFR 64.2(b)(1) include emission limitations or standards proposed by EPA after November 15, 1990, or emission limitations or standards for which a Part 70 or 71 permit specifies a continuous compliance determination method.

The Agency reviewed the emission units that are in place at that time to determine if a CAM plan was required:

- Abrasive Blasting (Emission Unit #1): Particulate matter emissions from abrasive blasting operations are controlled by enclosures or buildings with emissions controlled by either a dust collector or filtered exhaust. The emission unit does not fall subject to any emission limitation for a specific pollutant so CAM would not apply. The existing operating permit does specify a continuous compliance determination method for adequately ensuring compliance with the generally applicable grain loading standard and opacity requirements. Specifically, Vigor monitors the pressure differential across the dust collectors used to control emissions of particulate matter.
- Spray Coating Operations (Emission Unit #2): Overspray from spray coating operations are controlled by filtered exhaust. The emission unit does not fall subject to any emission limitation for a specific pollutant so CAM would not apply.
- Gas-fired Boilers (Emission Unit #3): Gas-fired boilers do not employ a control device used to achieve compliance with a specific emission limitation or standard.
- Groundwater Remediation Equipment (Emission Unit #4): Uncontrolled emissions are below major source levels. Based on review of the analyses in the Notice of Construction technical worksheets, the uncontrolled emissions when these projects were first initiated were well below 100 tons per year of VOCs. Both projects are at the end of the remediation process which allows removal of the control devices.
- Diesel Emergency Generators (Emission Unit #5): Emergency generators do not employ a control device to achieve compliance with a specific emission limitation or standard.

6. Applicability of NESHAP and NSPS

There are three National Emission Standards for Hazardous Air Pollutants (NESHAPs) that apply to the operations at the facility.

Shipbuilding and Repair (Surface Coating) NESHAP: 40 CFR Part 63, Subpart II applies since Vigor is a ship repair facility that is classified as a major source of hazardous air pollutants (HAP). The rule limits the volatile organic hazardous air pollutant (VOHAP) content of several categories of marine coatings and specifies work practice standards to minimize evaporative emissions and spills from handling, transfer, and storage of organic thinning solvent and paint waste. The rule provides four options for determining compliance with the coating limits, but only three have been included in this operating permit. The fourth option would allow Vigor to use an EPA-approved test method to measure the VOHAP content of each coating or groups of coatings. Since the Agency is unaware that any EPA approval has been granted, this option has not been included. The requirements that pertain to the VOHAP limits and work practice standards are contained in Table 3 of the permit (Surface Coating Operations).

Boiler NESHAP: 40 CFR Part 63, Subpart DDDDD establishes emission limitations and work practice standards for HAP emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP. Vigor has three natural

gas boilers that operate at the shipyard that meet the definition of units designed to burn gas 1. All have a heat input capacity less than 10 MMBtu/hr. Applicable requirements are contained in Table 4 of the permit.

Reciprocating Internal Combustion Engines (RICE) NESHAP: Vigor has three diesel-fueled emergency generators. Each unit is rated at greater than 500 horsepower and was constructed before December 19, 2002 (existing stationary RICE). In accordance with 40 CFR 63.6600(c), the emission limitations in Tables 1a, 2a, 2c and 2d to the subpart and the operating limitations in Tables 1b and 2b to the subpart do not apply. Fuel and recordkeeping requirements are contained in Table 6 of the permit. If engines become non-emergency in the future, additional requirements would apply.

NSPS: No Standards of Performance for New Stationary Source in 40 CFR Part 60 apply to Vigor.

7. Compliance History

Vigor has been inspected by the Agency at least annually over the past five years. In addition, the operating permit requires the facility to conduct numerous self-monitoring activities to fix problems as they are identified, and to report deviations of the AOP requirements to the Agency. Deviations reported by Vigor as well as problems identified during inspections by the Agency may result in Written Warnings (WWs) or Notices of Violation (NOVs). The table below lists WWs and NOVs issued to Vigor during the last 5 years:

Violation Date	NOV/WW #	Issue Date	Closure Date	Reg/AOP Citation	Note
Feb-Mar 2007 Jul-Nov 2007 Aug-Sept 2008	NOV 3-004342	07/02/09		NOC 9832, Condition 10 NOC7253, Condition11 AOP 12539, EU5.9	Failure to meet required 95% destruction efficiency for the catalytic oxidizer on the groundwater remediation system
09/25/08 09/26/08 09/29/08	NOV 3-004344	07/01/09		NOC 9832, Condition 9	Temperature at outlet to catalytic oxidizer was not maintained above 330 degrees Celsius
03/19/10	Written Warning 2-008516	03/26/10	04/20/10	Regulation I, Section 9.03	Observation of black smoke equal to or greater than 20% density from USCGC Healy. Letter received by Agency on 04/09/10 noting actions taken to work with ship to correct problem. Vessel was no longer under control of facility. Excessive emissions result of electrical problem on vessels' propulsion system.

Violation Date	NOV/WW #	Issue Date	Closure Date	Reg/AOP Citation	Note
08/17/10	Written Warning 2-008521	08/20/10	10/07/10	Regulation I, Section 7.09(b)(3)	Failure to maintain equipment in good working order. Failed to replace exhaust filters in spray booth #1 after differential pressure gauge indicated filters were over capacity. Letter specifying corrective actions received by Agency on 09/13/10. Noted that painting operations immediately ceased and filter replaced that same day.
08/17/10	NOV 3-004828	08/20/10	10/27/10	Regulation I, Section 9.20	Failure to maintain equipment in good working order. Operated baghouse for an abrasive blasting shed that was not maintained in good working order which resulted in visible emissions. Letter specifying corrective actions received by Agency on 09/13/10. Noted that ventilation system immediately turned off and that preventative maintenance had been performed during week of August 9 th that resulted in a pigeon being lodged in the louvers that control air downstream of baghouse. Pigeon was removed and ventilation system operating properly again.
07/16/12	Written Warning 2-008604	7/25/12	8/14/12	63.783 (b)(2)	Failure to keep containers of thinning solvent closed.
03/05/13	NOV 3-006715	6/25/13	11/08/13	AOP 12539	Failure to submit a certification of compliance by March 1 st for the previous calendar year
03/05/13	NOV 3-006716	6/25/13	11/08/13	AOP 12539	Failure to submit semi-annual monitoring report in a timely manner.
05/08/13	NOV 3-006714	06/25/13	11/08/13	I 7.09a	Failure to submit an emission report listing those air contaminants emitted during the previous calendar year that equaled or exceeded reporting thresholds
06/03/13	NOV 3-005872	11/05/13	03/05/14	AOP 12539 A.I.A.I	Causing or allowing the emission of air contaminants in excess of 20% opacity for more than 3 minutes per hour.
06/03/13	NOV 3-005875	02/24/14	05/21/14	AOP 12539 I.A.I	Causing or allowing the emission of air contaminants in excess of 20% opacity for more than 3 minutes per hour.

There are no outstanding enforcement issues at this time. A review of the source files does reflect occasional complaints about dust from outdoor sandblasting and paint odors and overspray from outdoor painting. Vigor has instituted a notification program with its

neighbors to advise them when it will be painting. Vigor has also worked with neighbors to detail any impacted cars.

8. Emission Inventory

Puget Sound Clean Air Agency Regulation I, Section 7.09(a) requires Vigor to submit an annual emission report, listing air contaminants' emissions that were equal to or greater than the following thresholds in the previous calendar year:

Pollutant	Threshold (tons/year)
Carbon monoxide (CO) emissions	25
Nitrogen oxide (NO _x) emissions	25
Particulate matter (PM ₁₀) emissions	25
Particulate matter (PM _{2.5}) emissions	25
Sulfur oxide (SO _x) emissions	25
Volatile organic compounds (VOC) emissions	25
Any single toxic air contaminant (TAC) emissions	2
Facility combined total of all TAC emissions	6

Vigor reports emissions for emissions associated with natural gas combustion, surface coating operations and abrasive blasting operations. A summary of emissions from each of these activities is provided below:

- Natural gas combustion: The emissions from natural gas combustion are estimated using the amount of natural gas combusted during the year and EPA emission factors. The most significant emissions are CO and NO_x, but estimated to be only 2 tons/year for each pollutant in 2014.
- Surface Coating Operations: Emissions from surface coating operations are estimated using the material balance method. Both TAC and VOC emissions are associated with these operations. The emissions primarily associated with surface coating vary depending on the level of activity at the shipyard. In 2014, emissions of VOCs were estimated to be 37 tons per year and emissions of total hazardous air pollutants (a subset of TAC) were estimated to be 16 tons/year. Emissions of xylene were above the major source threshold of 10 tons per year (12 tons/year). Based on a review of emissions in the last 5 years, emissions were highest in 2012 with VOC emissions estimated at 93 tons/year.
- Abrasive Blasting Operations: Emissions from abrasive blasting operations are estimated using the amount of abrasive blast material used and EPA emission factors. Emissions associated with abrasive blasting are primarily PM_{2.5} and PM₁₀. Emissions from abrasive blasting are estimated to be below 1 tons/year.

9. Explanation of Applicable Requirements

The permit only identifies the requirements that the Agency has determined to be within the scope of the definition of “applicable requirements” under the operating permit program. Vigor is legally responsible for complying with all applicable requirements of the operating permit as well as other requirements that do not fit the definition of “applicable requirements” found in Chapter 173-401 WAC.

9.1 Facility-wide Applicable Requirements

Table 1 in Section 1.A of the permit identifies the applicable requirements that apply facility-wide. In addition to the regulatory citation, the permit includes a brief description of the applicable requirement which is for information only and is not an enforceable provision of the permit. In the event of any conflict or omission between the requirement description and the applicable requirement cited in the second column, the cited regulatory requirement takes precedence. For more information regarding any of the applicable requirements cited in the second column, refer to the actual statute or regulation cited. When applicable, the Reference Test Method is also identified with the applicable requirement. This test method is used if and when a source test is required to determine compliance. In some cases where the applicable requirements do not cite a test method, one has been added. Test methods and corresponding averaging periods are provided in Section 7 of the permit.

Table 1 also identifies the monitoring, recordkeeping and reporting obligations that must be performed by Vigor. The method is described in Section 2 of the permit. Following the monitoring methods is an enforceable requirement of the permit. Some of the facility-wide requirements cited in Table 1 do not specify compliance determination or monitoring methods in the regulation. In these cases, a site-specific compliance monitoring method that sufficiently yields reliable data for the relevant time period has been added to the permit pursuant to WAC 173-401-615(1)(b). The basis for all decisions to add periodic monitoring and recordkeeping terms is described below.

Opacity and Particulate Matter Provisions

Regulations that address opacity and particulate matter emission limits do not specify periodic testing or monitoring in the regulations themselves. Pursuant to WAC 173-401-615(1)(b), the Agency has determined that weekly inspections of the spray coating operations, abrasive blasting operations, and combustion sources (e.g. boilers, space heaters and water heaters) for visible emissions are sufficient for determining general compliance with these requirements (opacity monitoring is surrogate monitoring for particulate matter). If visible emissions are noted, the permit allows Vigor to use the reference test method to determine compliance. Otherwise, Vigor must take corrective action or shut the unit down within 24 hours. It is a deviation of the permit if corrective action is not taken to fix the problem within 24 hours and the emission unit was not shut down.

The monitoring method in the permit renewal is consistent with the method in the existing operating permit and the Agency has determined this method is sufficient. The majority of equipment at Vigor does not normally emit visible emissions.

In the initial operating permit, Vigor was required to monitor opacity using Ecology Method 9A from all ships located at the facility during startup, propulsion testing and

shutdown. If visible emissions were observed, Vigor had to take corrective action or report as a deviation. The Agency has removed this requirement in the permit renewal since it was determined that EPA has deemed these engines to be non-road engines and states are preempted from applying any emission standards to these engines. This includes ships being worked on pier-side and in the dry docks. Ship engines that are put in test stands would be considered stationary and require permitting under our Notice of Construction program for engine testing operations. If visible emissions from ship engines are observed during routine or required facility inspections, Vigor should evaluate and take corrective action, if applicable. In accordance with Regulation I, Section 9.11, it is unlawful to cause or allow emissions in sufficient quantities and such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonable interferes with enjoyment of life and property. Regulation I, Section 9.20(b) also requires equipment to be maintained in good working order. If visible emissions are observed, Vigor should verify compliance with these requirements.

Fugitive Dust Provisions

Regulations that address fugitive dust do not specify periodic testing or monitoring in the regulations themselves. Pursuant to WAC 173-401-615(1)(b), the Agency has determined that monthly monitoring for general compliance with regulations, including checking for fugitive dust, is sufficient for determining general compliance with these requirements. In addition, Vigor must investigate and resolve in a timely matter all air pollution complaints.

The monitoring method in the permit renewal is consistent with the method in the existing operating permit and the Agency has determined this method is sufficient. No deviations of the regulations that address fugitive dust have been reported by Vigor since issuance of the original permit. Similarly, the compliance history (above) shows no Notices of Violation of these standards have ever been issued and the Agency staff have not observed any fugitive dust or track-out that required corrective action. Yard roadways are paved and reasonably maintained to prevent fugitive dust. Activities that may have more potential to generate fugitive dust (e.g. stockpiles for abrasive blasting) have additional emission unit specific monitoring requirements. Routine inspection of all areas of the facility that could emit fugitive dust will minimize the chance of fugitive emissions.

Nuisance Provisions

Regulations that address nuisance provisions do not specify periodic testing or monitoring in the regulations themselves. Pursuant to WAC 173-401-615(1)(b), the Agency has determined that monthly monitoring for general compliance with regulations, including checking for fugitive dust and odors, is sufficient for determining general compliance with these requirements. In addition, Vigor must investigate and resolve in a timely matter all air pollution complaints.

The monitoring method in the permit renewal is consistent with the method in the existing operating permit and the Agency has determined this method is sufficient. No deviations of the nuisance provisions have been reported by Vigor since issuance of the original permit. Similarly, the compliance history (above) shows no Notices of Violation of these standards have ever been issued. There are potential odor and fugitive dust

sources which could result in nuisance complaints, but the monitoring method requires Vigor to respond and take corrective action as necessary to address nuisance complaints. Odor emissions could be associated with the spray coating operations and fugitive dust could be associated with abrasive blasting operations. However, both of these activities have additional emission unit specific monitoring associated with the activity.

Fuel Standards

Diesel fuel is used in emergency generators and for equipment throughout the site. No other fuel oil is used. Diesel fuel meets the fuel standards in Regulation I, Section 9.08(a) so no additional monitoring is requirement except to maintain records showing grade of diesel fuel.

Sulfur Dioxide Provisions

Natural Gas Combustion:

Only pipeline quality natural gas is burned at Vigor. "Natural gas" means a mixture of gaseous hydrocarbons, with at least 80 percent methane (by volume), and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the Washington Utilities and Transportation Commission. Vigor receives the same natural gas as all of the other natural gas consumers, private and industrial, in the Northwest. Based on an analysis of sulfur in natural gas and assuming almost all the sulfur in natural gas would be converted to sulfur dioxide (SO₂), less than 1 ppmv of SO₂ would be emitted from combustion units. This estimated value is less than one-tenth of one percent of the 1,000 ppm SO₂ standard. Therefore, it is reasonable to assume that combustion units that are fired on natural gas cannot exceed the 1,000 ppm SO₂ limits in Agency Regulation I, Section 9.07 and WAC 173-400-040(6).

Fuel oil combustion:

Only diesel fuel is used in fuel-burning equipment. Emissions of sulfur are based on the percentage of sulfur in the fuel (EPA AP-42, Section 1.3). The percentage of sulfur in diesel used at the facility could not result in an exceedance of the SO₂ exhaust concentration limit in these requirements (federal standards limit sulfur content in fuel). Therefore, no additional monitoring is required.

Hydrochloric Acid Provisions

Agency Regulation I, Section 9.10 specifies that HCl emissions shall not exceed 100 ppm (dry), corrected to 7% O₂ for combustion sources, including both internal and external combustion units. Since Vigor burns only pipeline-grade natural gas and diesel fuel oil in permitted emission units, and the other processes, the facility is incapable of violating the standard while complying with the other requirements in the permit. Therefore, the permit does not contain additional monitoring requirements.

Operational and Maintenance Provisions

PSCAA Regulation I, Section 9.20 requires Vigor to maintain equipment in good working order. Section 9.20(a) applies to sources that received an NOC Order of Approval under Agency Regulation I, Article 6. Section 9.20(b) applies to equipment not subject to

Section 9.20(a). The permit identifies the minimum monitoring criteria for maintaining equipment in good working order. In addition, the facility-wide inspections provide monitoring of the general effectiveness of the monitoring method. The Agency has determined that the monitoring requirements in the permit provides sufficient monitoring criteria to certify that the equipment has been maintained in good working order. However, the Agency reserves the right to evaluate the maintenance of each piece of equipment to determine if it has been maintained in good working order.

In accordance with Agency Regulation I, Section 7.09(b), Vigor is required to develop and implement an O & M Plan to assure continuous compliance with Agency Regulations I, II and III. The requirement specifies that the plan shall reflect good industrial practice, but does not define how to determine good industrial practice. In most instances, following the manufacturer's operations manual or equipment operational schedule is considered good industrial practice. This language is consistent with a Washington Department of Ecology requirement in WAC 173-400-101(4). Agency Regulation I, Section 7.09(b) also requires Vigor to promptly correct any defective equipment. However the underlying requirement in most instances does not define "promptly"; hence for significant emission units and applicable requirements that Vigor has a reasonable possibility of violating or that a violation would cause an air quality problem, the Agency added clarification that "promptly" means within 24 hours. For many insignificant emission units and equipment not identified in the permit, the meaning of "promptly" will vary because the emission sources and suitable pollution control techniques vary widely, depending on the contaminant sources and the pollution control technology employed. However, the permit identifies a means by which to identify if Vigor is following good industrial practice.

9.2 Emission Unit Specific Applicable Requirements

Section 1.B of the permit identifies applicable requirements that are specific to an emission unit or activity. The facility-wide requirements of Section 1.A. also apply to all the emission units identified in Section 1.B., but the requirements are not repeated in this section unless there are different or additional monitoring requirements associated with the emission unit.

The format of the tables that identify emission unit specific applicable requirements are similar to Table 1. In addition to the regulatory citation, the permit includes a brief description of the applicable requirement which is for information only and is not an enforceable provision of the permit. In the event of any conflict or omission between the requirement description and the applicable requirement cited in the second column, the cited regulatory requirement takes precedence. When applicable, the Reference Test Method is also identified with the applicable requirement. This test method is used if and when a source test is required to determine compliance. In some cases where the applicable requirements do not cite a test method, one has been added. The tables also identify the monitoring, recordkeeping and reporting obligations that must be performed by Vigor and are described in Section 2 of the permit. Following the monitoring methods is an enforceable requirement of the permit.

Abrasive Blasting Operations (Emission Unit #1)

Vigor uses abrasive blasting to clean ship components and vessels in dry dock before final finishing and assembly. All abrasive blasting occurs under an Order of Approval

issued by the Agency. This includes the use of up to 10 temporary abrasive blasting operations that can occur throughout the shipyard – dry docks (1 (Vigilant), 3 or 10), onshore portion of shipyard, or vessels pier-side. The monitoring in the permit are consistent with the requirements in these Orders.

Vigor submitted a comment during the public comment period stating they use portable blast cleaning equipment that falls under our Notice of Construction exemption in Regulation I, Section 6.03(c)(47). Therefore, this equipment would not be required to meet the requirements in Table 2 that are associated with specific Orders of Approval (Requirements B.3 through B.17). However, the equipment would be subject to generally applicable requirements.

Spray Coating Operations (Emission Unit #2)

This section includes all activities and equipment associated with surface coating operations for both vessel repair and ship building activities. These operations include coating mixing, application, drying, and curing; spray gun cleaning; solvent wipe and solvent flush; and material and waste handling. As with abrasive blasting, spray coating operations have occurred over many years at the shipyard and were originally not required to obtain an NOC Order of Approval. Over time, spray coating operations have evolved so that all spray coating at the shipyard is now conducted in spray booths, spray rooms or within an enclosure system to prevent overspray.

All spray coating operations are authorized under Orders of Approval except for spray coating that occurs on dry docks and vessels pier-side which are considered existing sources. The monitoring method in the permit is based on conditions in these Orders of Approval. For spray coating operations conducted on the dry docks or vessels pier-side that are not conducted under a specific Order of Approval, the monitoring is included as a gap-filling measure to ensure overspray does not leave the property.

Subpart II NESHAP Requirements

Vigor is subject to the Ship Building and Repair NESHAP 40 CFR Subpart II. The requirements apply to surface coating operations throughout the facility and include limits on Volatile Organic Hazardous Air Pollutant (VOHAP) content in coatings and work practice standards. Table 3 of the permit identifies applicable requirements.

In order to demonstrate compliance with VOHAP limits, Vigor may use several options in lieu of testing each batch of coating:

- Option 1: Procedures to demonstrate compliance for coatings to which thinning solvent will not be added
- Option 2: Procedures to demonstrate compliance for coatings to which thinning solvent will be added
- Option 3: Procedures to demonstrate compliance for coatings to which the same thinning solvent will be added (group compliance)

All three options are included in the permit, although Option 2 is typically used by Vigor to demonstrate compliance with the NESHAP. A fourth option allows demonstration of compliance through an alternative test method (other than Method 24), but requires approval by EPA. Since Vigor has not obtained approval to use an alternative test method to date, this option was not included in the permit.

The NESHAP also requires Vigor maintain an implementation plan that includes procedures for demonstrating compliance with VOHAP limits, procedures for maintaining required records, and procedures for complying with work practice standards.

Gas 1 Boilers (Emission Unit #3)

40 CFR Part 63, Subpart DDDDD applies to the three natural gas boilers operated at Vigor since the facility is a major source of HAPs. The applicable NESHAP provisions have been included in Table 4 of the permit. There are several requirements in the NESHAP that are obsolete:

- The one-time energy assessment required by the NESHAP was conducted on August 19, 2015. Results were submitted to the Agency by e-mail on February 10, 2016. The assessment was conducted by Trinity Consultant. This documentation adequately demonstrates compliance with the one-time energy assessment requirement.
- Vigor submitted an initial notification for the three natural gas boilers to the Agency and EPA Region 10 on June 4, 2013. Therefore, this is an obsolete requirement.
- The initial tune-ups on boiler #2 and boiler #3 were completed on December 15, 2015. Results from this tune-up were submitted to the Agency by e-mail on February 10, 2016 and to EPA via CDX on February 9, 2016 (Notification of Compliance Status). The pier boiler is still offline so an initial tune-up has not been conducted.

Vigor operates three hot water boilers in their shop that are exempt from the NESHAP since they meet the criteria in 40 CFR 63.7575:

*Hot water heater means a closed vessel with a capacity of no more than 120 U.S. gallons in which water is heated by combustion of gaseous, liquid, or biomass/bio-based solid fuel and is withdrawn for use external to the vessel. **Hot water boilers (i.e., not generating steam) combusting gaseous, liquid, or biomass fuel with a heat input capacity of less than 1.6 million Btu per hour are included in this definition.** The 120 U.S. gallon capacity threshold to be considered a hot water heater is independent of the 1.6 MMBtu/hr heat input capacity threshold for hot water boilers. Hot water heater also means a tankless unit that provides on demand hot water.*

40 CFR 63.7540(a)(10)(vi)(C) is not applicable since the boilers are not physically capable of using any other fuel than diesel. The boilers were originally dual fueled, but are not set up to burn only natural-gas.

Ground Water Remediation Equipment (Emission Unit #4)

Over the years, Vigor' soil has been contaminated with fuels. The groundwater remediation system draws water from all areas at the facility. Two groundwater remediation sheds are operated to extract water as benzene is separated from the water.

The currently permitted system includes both remediation sheds with hydrocarbon emissions controlled by a catalytic oxidizer when emissions are greater than 50 ppmv. When the catalytic oxidizer is required to operate, Vigor is required to monitor the flow rate entering the catalytic oxidizer and temperatures of vapor at the inlet and outlet of the

catalytic bed to verify the equipment is maintained in good working order. If outside of the ranges specified in the permit, Vigor is required to take corrective action within 24 hours, shut down the groundwater remediation system, or report as a deviation. In addition, Vigor must measure the concentration of gasoline range total petroleum hydrocarbon on a monthly basis to either verify adequate destruction efficiency of the catalytic oxidizer or demonstrate the concentrations are below 50 ppm and therefore the catalytic oxidizer is no longer needed.

Stationary Reciprocating Internal Combustion Engines (Emission Unit #6)

Vigor has three emergency diesel generators that is subject to the NESHAP for Stationary reciprocating internal combustion engine (RICE) in 40 CFR Part 63, Subpart ZZZZ. The engines are all rated at greater than 500 horsepower. The generators are considered existing emergency stationary RICE since construction commenced before December 19, 2002 and they are located at a major source of HAPs. The NESHAP requirements that apply to the generators are included in Table 6 of the permit.

Two of the emergency generators are located inside Dry Dock #10. Vigor requested we verify NESHAP applicability since the dry dock is actually classified as a marine vessel, and engines operated on marine vessels are exempt from the rule. However, the Agency has determined that the dry dock is part of a stationary facility since it does not operate at locations away from Vigor. Therefore, these engines are considered stationary sources.

Vigor also has one pier crane that is powered solely by a diesel/electric generator but it is mobile on a track and self-propelled. This meets the definition of a non-road engine in 40 CFR 1068.3, and is therefore not subject to the NESHAP which applies only to stationary sources.

Non-road engine means:

(1) Except as discussed in paragraph (2) of this definition, a non-road engine is an internal combustion engine that meets any of the following criteria:

(i) It is (or will be) used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers).

(ii) It is (or will be) used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers).

(iii) By itself or in or on a piece of equipment, it is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(2) An internal combustion engine is not a non-road engine if it meets any of the following criteria:

(i) *The engine is used to propel a motor vehicle, an aircraft, or equipment used solely for competition.*

(ii) *The engine is regulated under 40 CFR part 60, (or otherwise regulated by a federal New Source Performance Standard promulgated under section 111 of the Clean Air Act (42 U.S.C. 7411)).*

(iii) *The engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. See §1068.31 for provisions that apply if the engine is removed from the location.*

9.3 Routine Recordkeeping Requirements

A summary of recordkeeping requirements is included in the table below:

General	Facility- wide Opacity Monitoring	Weekly	Condition 2.1
	Facility-wide Inspections	Monthly	Condition 2.2
	Nuisance Response	If complaint received	Condition 2.3
	Operation and Maintenance (O&M) Plan Requirements	Per O&M Plan	Condition 2.6
	Deviation Report	As required	Condition 5.5
Emission Activity Specific	Temporary Enclosure monitoring	Prior to conducting abrasive blasting or spray coating in enclosure	Condition 2.7
	Abrasive Blasting Operation Monitoring	Once each shift	Condition 2.8
	Abrasive Blast Material Usage Monitoring	If triggered	Condition 2.9
	Record of Temporary Operations	Daily	Condition 2.10
	Spray Coating Operation Monitoring	Once each shift	Condition 2.11
	Groundwater Remediation System Monitoring	Monthly	Condition 2.23
Shipbuilding and Repair NESHAP	Monthly records of non-exempt coatings used, their appropriate category, and applicable VOHAP limit	Monthly	Condition 2.12
	Records of certification of as-supplied VOC content for each batch of coating compiled on a monthly basis	Monthly	Condition 2.13

	In lieu of testing each batch, records showing compliance based on procedures in Condition 2.14	Monthly	Condition 2.14
	Results of any Method 24 measurement test	Ongoing	Condition 2.15
	Shipbuilding and Repair NESHAP Implementation Plan	Ongoing	Condition 2.16
	Shipbuilding and Repair NESHAP Recordkeeping	Ongoing	Condition 2.17
Boiler NESHAP	Copy of each notification and report submitted to comply with NESHAP, including notification of compliance status and one-time energy assessment	Ongoing	Condition 2.19
	Results of tune-up of each boiler	Tune-up schedule	Condition 2.20
	For unit designed to burn natural gas that uses alternative fuel, maintain records of total hours per calendar year that unit operated during periods of gas curtailment or gas supply emergencies	If triggered	Condition 2.22
RICE Engine NESHAP	Records demonstrating diesel fuel meets requirements for non-road diesel in 40 CFR 80.510(b)	Ongoing	Requirement B.67
	Records demonstrating operation of each engine as an emergency stationary RICE	Ongoing	Requirements B.69

9.4 Routine Reporting Requirements

A summary is included in the table below:

Report	Contents	Due	Permit Term
Deviation Report	All instances of deviation from the permit	If potential threat to human health or safety, ASAP but no later than 12 hours after discovered. Otherwise, no later than 30 days after end of month during which deviation occurred. May certify in semi-annual report	Condition 5.5
Semiannual Shipbuilding and Repair NESHAP Compliance Report	Reporting specified in NESHAP	No later than August 29 for reporting period between January 1 through June 30. No later than February 28 for reporting period between July 1 through December 31	Condition 2.26
Certification of Reports	Summarizes each permit report during 6-month period with certification of responsible official (as applicable)	No later than July 31 for reporting period between January 1 through June 30. No later than January 31 for reporting period between July 1 through December 31	Condition 5.4

Report	Contents	Due	Permit Term
Annual Compliance Certification	Certification of compliance with permit terms and conditions	By February 28 for the reporting period between January 1 through December 31	Condition 5.3
Annual Emission Inventory	Facility emission inventory	As required by Agency	Condition 6.15
Greenhouse Gas Reporting	Greenhouse Gas Emission Report	If exceeds emission thresholds (March 31 or October 31)	Condition 6.16
Boiler NESHAP Report	Compliance reports	Due January 31 of the following year after 2- or 5-year periods of compliance	Requirement B. 53 Conditions 2.27 – 2.28
Boiler NESHAP Modification	Notification of switches in fuel or physical change	Within 30 days of the switch/change	I.B.52
Changes to Notifications	Change to information provided un 40 CFR 63.9	Within 15 calendar days after the change	Requirements I.B.32 and I.B.56

10. Standard Terms and Condition

Some of the requirements that are more general in nature are included in Section 3, Standard Terms and Conditions. This provided a mechanism for describing requirements that are more general in nature. This section also contains the standard terms and conditions specifically listed in WAC 173-401-620.

11. General Permitting Requirements

Permit actions pertaining to the operating permit and new source review are included in Section 4, General Permitting Requirements.

12. General Compliance Requirements

General compliance requirements are included in Section 5 of the permit. These include certification and reporting requirements, requirements associated with inspections and investigations, and compliance testing requirements. Actions required for an affirmative defense for emergencies or excess emissions are also included in this section. Finally, this section provides a table summarizing the effective date of the regulations in the permit at the time of permit issuance. Regulations that are approved into the Washington State Implementation Plan (SIP) are federally enforceable. In some cases, there are two versions of the regulation because the newer version has not been adopted into the SIP. In this case, the older version of the regulation would be federally enforceable and the current rule would only be enforceable by the Agency (or State).

13. Generally Applicable Requirements

Some of the requirements that are generally applicable are included in Section 6 of the permit. This includes record retention, asbestos requirements, open burning requirements, stratospheric ozone and climate protection requirements, chemical accident prevention provisions in 40 CFR Part 68, concealment and masking, tampering,

RACT requirements, annual emission reporting requirements, greenhouse gas reporting requirements and non-road engine notification requirements.

14. Obsolete Requirements

A standard Agency NOC Order of Approval condition, Condition No. 1, requires that the equipment, device or process be installed according to plans and specifications submitted to the Agency. Once the equipment is installed, the Agency requires certification by the applicant that the installation was as approved; this is usually done with a Notice of Completion. While the Notice of Completion is a one-time requirement that Vigor has complied with, Vigor cannot change the approved equipment in such a manner that requires an NOC Order of Approval without first obtaining approval.

The following Orders of Approval are also obsolete:

- Orders of Approval No. 5671, 7069 and 7070 cancelled and superseded by Order of Approval No. 8678 (June 10, 2002)
- Order of Approval No. 7253 cancelled and superseded by Order of Approval No. 9832 (April 23, 2008)
- Order of Approval No. 9832 cancelled and superseded by Order of Approval No. 10110 (August 16, 2010)
- Order of Approval No. 10110 cancelled and superseded by Order of Approval No. 10296 (March 17, 2011)
- Order of Approval No. 9541 dated April 5, 2007 and Order of Approval 8678 dated June 10, 2002 cancelled and superseded by Order of Approval No. 10267 (November 17, 2015).
- Order of Approval No. 8496 for Stage 1 vapor recovery system on underground storage tank is obsolete since the equipment is no longer on-site.

15. Inapplicable Requirements

The requirements identified in Section 8 of Vigor Shipyard's Air Operating Permit do not apply to the facility, or to the specific emissions units identified in the permit. The permit shield applies to all requirements so identified.

Vigor requested several additional requirements be identified as inapplicable, but the Agency made the determination that the following requirements were not appropriately identified as inapplicable for the reasons in the table:

Requirement	Description	Reason not Identified as Inapplicable
Order of Approval No. 2277	Paint Spray Booth Approval	Although there are not specific conditions in the Order, this is still considered an applicable requirement
Order of Approval No. 2452	Abrasive Blasting Approval	Although there are not specific conditions in the Order, this is still considered an applicable requirement
Order of Approval No. 4213	Cleaver-Brooks Natural Gas Boiler Approval	Although there are not specific conditions in the Order, this is still

		considered an applicable requirement
Order of Approval No. 7069	Spray Coating Booth Approval	Obsolete requirement since cancelled and superseded by Order of Approval No. 8678
Order of Approval No. 7070	Spray Coating Room Approval	Obsolete requirement since cancelled and superseded by Order of Approval No. 8678
WAC 173-400-115 40 CFR 60	New Source Performance Standards (NSPS)	This is too broad a category since changes at the facility could trigger NSPS requirements
WAC 173-470	Ambient standards for particulates	Not considered an inapplicable requirement
WAC 173-474	Ambient standards for sulfur oxides	Not considered an inapplicable requirement
WAC 173-475	Ambient standards for CO, ozone, and NO ₂	Not considered an inapplicable requirement
WAC 173-480	Ambient standards for radionuclides	Not considered an inapplicable requirement
WAC 173-481	Ambient standards for fluorides	Not considered an inapplicable requirement
40 CFR Part 61 (except M)	Emission Standards for Hazardous Air Pollutants	Too broad a category
40 CFR Part 63 (except II)	Emission Standards for Hazardous Air Pollutants	Too broad a category
40 CFR 70	State operating permit programs	Not an inapplicable requirement
40 CFR 82	Stratospheric ozone protection	Not an inapplicable requirement

16. Insignificant Emission Units and Activities

Section 9 of the permit addresses insignificant emission units and activities. In accordance with WAC 173-401-530(1), determination of an emission unit or activity as insignificant does not exempt the unit or activity from any applicable requirement.

An emission unit or activity is insignificant based on one or more of the criteria identified in WAC 173-401-530. This includes categorical exemption, exemption based on emissions being below emission thresholds in WAC 173-401-530(4), or exemption based on size or production rate. Activities that generate only fugitive emissions which are subject to no applicable requirement other than generally applicable requirements can also be classified as insignificant. Categorical exemption units or activities do not need to be listed in the permit application, but all others do. Insignificant emission units and activities that are not categorically exempt under WAC 173-401-532 have been identified

in Section 9 of the permit. Categorically exempt units that were identified in the permit application include:

Unit Name	Basis for IEU Designation
Electrical Shop Oven, Building T-14	WAC 173-401-532(107)
Sludge/Oily Water Storage Tanks (9)	WAC 173-401-532(4)

17. Explanation of Changes Made During Course of Permit Renewal

In preparing the air operating permit renewal, numerous regulatory references throughout the AOP were updated due to rule changes since the last time the permit was open. More substantive changes are described below:

- Added requirements in Orders of Approval approved since original operating permit was issued.
- Incorporated new NESHAP requirements that apply to natural-gas fired boilers and reciprocating internal combustion engines (RICE).
- Updated monitoring requirements to add clarity.
- Removed the emission unit and associated requirements for the gasoline underground storage tank previously used for fueling equipment used on site. This tank has been removed from the site.

In addition, the format of the permit was updated for easier readability.

18. Public Comments and Responses

The 30-day public comment period for the air operating permit renewal ended June 15, 2016. Notices were published on the Agency's website, in the Seattle Times, and in the Daily Journal of Commerce.

The Agency received one comment during the 30-day public comment period. A comment from Vigor stated that they use portable blast cleaning equipment that falls under our Notice of Construction exemption in Regulation I, Section 6.03(c)(47). They requested the Statement of Basis include documentation that this equipment is on-site, but would not be subject to the requirements that apply to other abrasive blasting operations that are required to obtain a Notice of Construction Order of Approval. Since this is a categorical exemption, the Agency did not review the equipment. But equipment that meets the criteria in Regulation I, Section 6.03(c)(47) would be exempt from Notice of Construction permitting requirements, and therefore are not subject to the requirements in Table 2 that are associated with specific Orders of Approval (Requirements B.3 through B.17). This specific exemption applies to portable vacuum blasting equipment using steel shot and vented to a fabric filter. The equipment would be subject to generally applicable requirements.

In addition, the tables in Condition 5.24 of the permit were updated with the effective date of rules as reflected in PSCAA's approved State Implementation Plan (SIP). Originally the table listed dates in Ecology's approved SIP which are not federally enforceable in our jurisdiction.