



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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May 13, 2015

Mr. Bob Allendorfer  
Business Unit Leader  
BP Cherry Point Refinery  
4519 Grandview Road  
Blaine, WA 98230

**Re: Regional Haze Best Available Retrofit Technology (BART) Determination, Revision 2,  
Inclusion of BART Alternative**

Dear Mr. Allendorfer:

BART is required to reduce the regional haze impacts of emissions of your facility. The enclosed order #7836, Revision 2, contains our BART determination for your facility revised as requested.

If you have questions or requests relating to this order, please contact Alan Newman at (360) 407-6810 or at the address above.

Sincerely,

Ranil Dhammapala, Ph.D.  
Acting Science and Engineering Section Manager  
Air Quality Program

rd/te

Enclosure

By certified mail

cc: Agata McIntyre, NWCAA  
Jim Chalfant, BP Cherry Point Refinery  
Alan Newman, Ecology



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN	]	
ADMINISTRATIVE ORDER AGAINST:	]	
	]	ORDER NO. 7836
BP Cherry Point Refinery	]	Revision 2, Inclusion of
_____	]	BART Alternative

TO: Mr. Bob Allendorfer  
BP Cherry Point Refinery  
4519 Grandview Road  
Blaine, WA 98230

This is an Administrative Order requiring your company to comply with WAC 173-400-151 by taking the actions which are described below. Chapter 70.94 RCW authorizes the Washington State Department of Ecology's Air Quality Program (Ecology) to issue Administrative Orders to require compliance with the requirements of Chapter 70.94 RCW and regulations issued to implement it.

Ecology has determined that portions of your facility are subject to the provisions of the federal and state visibility protection program (WAC 173-400-151 and 40 CFR Part 51, Subpart P). The rules require that the State determine what technologies and level of emission control constitutes Best Available Retrofit Technology (BART) for the eligible emission units at your facility. The rules also require the installation and use of those emission controls on the BART-eligible emission units. The emission controls are to be installed as expeditiously as possible, but in no event can the State allow them to start operation later than five years after the State's Regional Haze SIP amendment is approved by the United States Environmental Protection Agency (EPA).

**FINDINGS**

The BP Cherry Point Refinery operates an oil refinery near Blaine, Washington, that contains emission units that are subject to BART.

A. The BART-eligible emission units at the BP Cherry Point Refinery are:

a. Process heaters and boilers:

1. 30-1601, Boiler #1
2. 30-1603, Boiler #3
3. 10-1401, Crude Charge Heater
4. 10-1451, South Vacuum Heater
5. 11-1401, Naphtha HDS Charge Heater
6. 11-1402, Naphtha HDS Stripper Reboiler
7. 11-1403-1406, #1 Reformer Heaters

8. 12-1401-01, Coker Charge Heater (#1 North)
9. 12-1401-02, Coker Charge Heater (#2 South)
10. 13-1401, #1 Diesel HDS Charge Heater
11. 13-1402, #1 Diesel HDS Stabilizer Reboiler
12. 14-1401, Steam Reforming Furnace #1 - (North Hydrogen (H<sub>2</sub>) Plant)
13. 14-1402, Steam Reforming Furnace #2 - (South H<sub>2</sub> Plant)
14. 15-1401, R-1 HC Reactor Heater
15. 15-1402, R-4 HC Reactor Heater
16. 15-1451, 1st Stage HC Fractionator Reboiler
17. 15-1452, 2nd Stage HC Fractionator Reboiler

b. Other units:

1. 17, 19, SRU & TGU
2. 29.110, High Pressure Flare
3. 29-111, Low Pressure Flare
4. Green Coke Load out

B. BART emission limitations for the BART-eligible emission units is a combination of:

- a. Use of existing burners on process heaters and reboilers.
- b. Continued use of the current refinery fuel gas sulfur scrubbing system for control of sulfur dioxide (SO<sub>2</sub>) emissions.

C. Treatment of Specific Units

- a. Boilers #1 and #3 were decommissioned on December 11, 2009.

Additional information and analysis is available in the BART Determination Support Document for the BP Cherry Point Refinery, Blaine, Washington, by Ecology, March 2009, and the Best Available Retrofit Technology Determination, BP Cherry Point Refinery, prepared by Geomatrix Consultants, March 2008. Information on Revision 1 to this Order can be found in the BART Determination Support Document for Revision 1, dated May 2013. Information on Revision 2 to this Order can be found in the BART Determination Support Document for Revision 2, dated June 2014.

**YOU ARE ORDERED:** To install and operate emission control equipment in accordance with the following conditions.

### **BART Emission Limitations**

#### 1. Particulate Matter Emissions

1.1. All BART-eligible units listed in Finding A meet the emission limitations for particulate matter found in NWCAA's Regulation 455.1 given below.

1.1.1. Emissions shall not exceed 0.10 grain/dscf (corrected to 7 percent oxygen (O<sub>2</sub>)), except from all gaseous and distillate fuel burning equipment (the definition of fuel burning equipment does not include internal combustion engines), emissions shall not exceed 0.05 grain/dscf (0.11 g/m<sup>3</sup>) corrected to 7 percent O<sub>2</sub>.

1.2. Compliance with the particulate emission limits above will be determined as follows:

1.2.1. Burn only gaseous fuels.

1.2.2. For all BART-eligible units, perform particulate emissions testing to determine compliance when requested in writing by NWCAA or Ecology. Particulate testing is performed using EPA Test Method 5 in 40 CFR Part 60 Appendix A, and Method 202 in 40 CFR 51 Appendix M.

#### 2. Nitrogen Oxides (NO<sub>x</sub>) Emissions

##### 2.1. South Vacuum Heater, Unit 10-1451

2.1.1. NO<sub>x</sub> emissions shall not exceed 10.5 pounds per hour (lb/hr) based on a calendar day average.

2.1.2. Compliance with this condition shall be determined by a CEM installed, calibrated, maintained, and operated to measure NO<sub>x</sub> and O<sub>2</sub> in the stack.

2.1.3. Each monitor shall meet the appropriate sections of NWCAA Section 366 and NWCAA Appendix A.

2.1.4. Hourly emission rates for NO<sub>x</sub> shall be recorded. On-site documentation shall be kept showing the method of calculating the mass emission rate.

2.1.5. Report data in monthly monitoring report.

##### 2.2. Coker Charge Heater (#1 North), 12-1401-01

- 2.2.1. NO<sub>x</sub> emissions shall not exceed 15.2 lb/hr and 66 tons per year (tpy).
- 2.2.2. Compliance shall be determined by biennial performance tests on one of two identical heaters (#2 North or #2 South) using 40 CFR 60 Appendix A Method 7A or 7E.
- 2.3. Coker Charge Heater (#2 South), 12-1401-02
  - 2.3.1. NO<sub>x</sub> emissions shall not exceed 15.2 lb/hr and 66 tpy.
  - 2.3.2. Compliance shall be determined by biennial performance tests on one of two identical heaters using 40 CFR 60 Appendix A Method 7A or 7E.
- 2.4. #1 Diesel HDS Charge Heater, 13-1401 and Diesel HDS Stabilizer Reboiler, 13-1402
  - 2.4.1. NO<sub>x</sub> emissions from the #1 Diesel Hydrotreater Charge Heater shall not exceed 0.040 lb/MMBtu (higher heating value), or if this emission limit is exceeded, 1.9 lb/hr.
  - 2.4.2. NO<sub>x</sub> emissions from the Stabilizer Reboiler Heater shall not exceed 26 ppmv (dry basis corrected to 7 percent O<sub>2</sub>) based on a 24-hour rolling average. If this concentration is exceeded, a secondary limit to demonstrate compliance is 2.2 lb/hr based on a 24-hour rolling average.
    - 2.4.2.1. Ongoing compliance with this condition shall be determined by a continuous emission monitor (CEM) installed, calibrated, maintained, and operated to measure NO<sub>x</sub> and O<sub>2</sub> in the stack by no later than December 1, 2008. Each monitor shall meet the appropriate specifications of 40 CFR 60 Appendices B and F, NWCAA Section 367 and NWCAA Appendix A.
- 2.5. R-1 HC Reactor Heater, 15-1401
  - 2.5.1. NO<sub>x</sub> from the Hydrocracker R-1 Heater shall not exceed the following emission limits.
    - 2.5.1.1. 26 ppm by volume, dry basis, corrected to 7 percent O<sub>2</sub>, based on a 24-hour rolling average. Or, if this concentration based limit is exceeded, the following mass emission rate limit shall be used to demonstrate compliance.
    - 2.5.1.2. 4.9 lb/hr based on a 24-hour rolling average.
  - 2.5.2. Biennial source testing shall be completed within two months of the anniversary date of the initial test. The test shall be performed under

representative operating conditions and at a heater firing rate that corresponds to the operating condition of the Hydrocracker Unit on the scheduled test day. The test shall be conducted in accordance with USEPA Reference Method 7E, NWCAA Regulation Section 367 and NWCAA Appendix A.

- 2.5.3. NO<sub>x</sub> emissions shall be continuously monitored by a certified continuous emission monitoring system (CEMS) for NO<sub>x</sub> and O<sub>2</sub>. The CEMS shall be installed, calibrated, maintained, and operated in accordance with appropriate specifications of 40 CFR 60 Appendices B and F, NWCAA Section 367 and NWCAA Appendix A.
  - 2.5.4. An operating and maintenance manual that contains O&M information on the ultra-low NO<sub>x</sub> burners shall be maintained on site.
- 2.6. 1st Stage HC Fractionator Reboiler, 15-1451
- 2.6.1. NO<sub>x</sub> emissions from the boiler stack shall not exceed 0.05 lb/MMBtu or 9.9 lb/hr, both limits based on a 24-hour rolling average.
  - 2.6.2. A continuous emission monitor or equivalent method approved by the NWCAA shall be used to measure NO<sub>x</sub> emissions.
  - 2.6.3. An operating and maintenance manual that contains O&M information on the low NO<sub>x</sub> burners shall be maintained on site.
- 2.7. 2nd Stage HC Fractionator Reboiler, 15-1452
- 2.7.1. Emission of NO<sub>x</sub> from the heater stack shall not exceed 0.07 lb/MMBtu based on a 24-hour average and shall not exceed 56.2 tpy on a calendar year rolling average.
  - 2.7.2. Report NO<sub>x</sub> emissions based on firing rates on a calendar month basis within 30 days after the end of the previous month.
  - 2.7.3. Conduct periodic source testing once every five years within three months of the anniversary of the initial test. Follow 40 CFR 60 Appendix A Method 20.
  - 2.7.4. An operating and maintenance manual that contains O&M information on the low NO<sub>x</sub> burners shall be maintained on site.
- 2.8. No NO<sub>x</sub> emission limitations are applicable to the following units.
- 2.8.1. Crude Charge Heater Unit 10-1401, the Naphtha HDS Charge Heater Unit 11-1401
  - 2.8.2. Naphtha HDS Stripper Reboiler Unit 11-1402

- 2.8.3. #1 Reformer Heaters 11-1403-1406
- 2.8.4. Steam Reforming Furnace #1 (North Hydrogen (H<sub>2</sub>) Plant Unit 14-1401
- 2.8.5. Steam Reforming Furnace #2 (South H<sub>2</sub> Plant) Unit 14-1402
- 2.8.6. R 4 HC Reactor Heater, Unit 15-1402

### 3. SO<sub>2</sub> Emissions

#### 3.1. Coker Charge Heaters #1 North and #1 South

- 3.1.1. SO<sub>2</sub> emissions shall not exceed 14.9 lb/hr and 66 tpy per heater.
- 3.1.2. Compliance shall be determined by biennial performance tests on one of two identical heaters using 40 CFR 60 Method 6 or 6C or Fuel Gas Analysis using Method 11 or 15.

#### 3.2. Plant-wide refinery fuel gas requirements

- 3.2.1. All units identified in Finding A(a) and A(b)(1) shall meet the emissions limitations for fuel gas contained in the NWCAA's Agreed Compliance Order No. 5 Section IV, dated October 23, 2012.
  - 3.2.1.1. Fuel gas is limited to a composition of H<sub>2</sub>S <230 mg/dscm (0.10 gr/dscf). Equivalent to 162 ppm H<sub>2</sub>S, 3-hour rolling average.
- 3.2.2. Operate CEM for H<sub>2</sub>S concentration at the fuel feed line in accordance with NWCAA 367 and Appendix A - "Ambient Monitoring, Emission Testing, and Continuous Emission and Opacity Monitoring," 40 CFR 60 Subpart J and 40 CFR 60 Appendices B and F.
- 3.2.3. Periods of excess emissions that shall be determined and reported are defined as follows. All rolling 3-hour periods during which the average concentration of H<sub>2</sub>S as measured by the H<sub>2</sub>S continuous monitoring system under §60.105(a)(4) exceeds 162 ppmv.
- 3.2.4. Report average H<sub>2</sub>S content (3-hour rolling average) in monthly report.

### 4. All Other BART Units

#### 4.1. SRU and TGU

- 4.1.1. SO<sub>2</sub> emissions from TGU stacks 1 and 2 shall not exceed any of the following emission limits.

- 4.1.1.1. 250 ( $2.50 \times 10^2$ ) ppm by volume, dry basis, corrected to zero percent O<sub>2</sub>, based on a 12-hour rolling average. The 12-hour rolling average shall be calculated based on corrected hourly averages for the twelve, most recent, consecutive clock hours.
- 4.1.1.2. 1500 ( $1.50 \times 10^3$ ) ppm by volume, dry basis, corrected to zero percent O<sub>2</sub>, based on a one-hour rolling average.
- 4.1.1.3. Compliance with this condition shall be determined by a continuous emission monitor (CEM) installed, calibrated, maintained, and operated to measure SO<sub>2</sub> and O<sub>2</sub> in each TGU stack. Each monitor shall meet the appropriate specifications of 40 CFR 60 Appendices B and F, NWCAA Regulation Section 367 and NWCAA Appendix A.
- 4.1.1.4. Total tons of SO<sub>2</sub> emitted from the sulfur recovery unit shall not exceed 135 tons based on each consecutive 12-month rolling period. The most recent 12-month rolling total shall be reported to the NWCAA on each monthly emissions report.

### **Schedule for Compliance**

#### 5. Compliance with Conditions 1 through 4:

- 5.1. For all requirements in Conditions 1, 2, 3 and 4, except Conditions 2.5.1 and 2.6.1, compliance is required by August 7, 2009.
- 5.2. For all requirements in Conditions 2.5.1 and 2.6.1, compliance is required by July 1, 2014.

### **Monitoring and Recordkeeping Requirements**

#### 6. SO<sub>2</sub> Emissions

- 6.1. SO<sub>2</sub> performance tests required by Conditions 3.1.2 shall be submitted to NWCAA and Ecology upon request.
- 6.2. Operate CEMS measuring H<sub>2</sub>S concentration in accordance with NWCAA 367 and NWCAA Appendix A, and 40 CFR 60 Subpart J and 40 CFR 60 Appendices B and F.
- 6.3. CEMS data including daily average H<sub>2</sub>S concentrations of the refinery fuel gas shall be recorded and retained at the facility available for review by NWCAA or Ecology inspectors.

### **Other Requirements**

7. Boilers #1 and #3 shall be decommissioned by no later than March 27, 2010. NWCAA shall be notified in writing of the decommissioning date of each boiler. Notifications shall be postmarked no later than 15 days after each decommissioning event.
8. BP may request this compliance Order be rescinded after all of the following occur.
  - 8.1. All BART units at the plant have continuously complied with the emissions limitations in Conditions 1 through 4 for a period of three years.
  - 8.2. The emission limitations in this Order have been incorporated into one or more enforceable orders or permits issued under the criteria of RCW 70.94.152 or 70.94.153 and NWCAA regulations implementing these provisions.
  - 8.3. The emission limitations in the enforceable orders or permits have been incorporated into the Air Operating Permit issued by NWCAA to BP.
9. The BART requirements for an emission unit specifically listed in this Order do not apply after the BP Cherry Point Refinery has certified in writing to the Ecology and NWCAA that the named BART emission unit has been permanently taken out of service and dismantled.
10. Ecology may, by regulatory order, revise the monitoring, reporting, and recordkeeping requirements specified in this Order. The revised monitoring, reporting, and recordkeeping methods must provide equal or better information on the compliance status of the source or emission unit subject to the revised monitoring, reporting, or recordkeeping methods.
11. Issuance of this Order indicates requirements of Order 5069 have been complied with.

Within 20 days of receipt of this Order, you may request a delay in the submittal date. Any such request must be accompanied by a written justification for the delay.

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

You have a right to appeal this Order. To appeal you must:

- File your appeal with the Pollution Control Hearing Board within 30 days of the “date of receipt” of this document. Filing means actual receipt by the Board during regular office hours.

- Serve your appeal on the Department of Ecology within 30 days of the “date of receipt” of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). “Date of receipt” is defined at RCW 43.21B.001(2).

If you appeal, you must:

- Include a copy of this document with your Notice of Appeal.
- Serve and file your appeal in paper form; electronic copies are not accepted.

To file your appeal with the Pollution Control Hearing Board:

Mail appeal to:

The Pollution Control Hearings Board  
P.O. Box 40903  
Olympia, WA 98504-0903

OR

Deliver your appeal in person to:

The Pollution Control Hearings Board  
4224–6th Avenue SE Rowe Six, Bldg 2  
Lacey, WA 98503

To serve your appeal on the Department of Ecology:

Mail appeal to:

Department of Ecology  
Appeals Coordinator  
P.O. Box 47608  
Olympia, WA 98504-7608

OR

Deliver your appeal in person to:

Department of Ecology  
Appeals Coordinator  
300 Desmond Drive SE  
Lacey, WA 98503

And send a copy of your appeal packet to:

Alan Newman  
Department of Ecology  
Air Quality Program  
P. O. Box 47600  
Olympia, WA 98504-7600

For additional information, go to the Environmental Hearings Office website at <http://www.eho.wa.gov>.

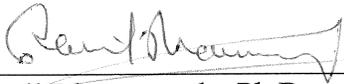
To find laws and agency rules, go to the Washington State Legislature website at <http://www1.leg.wa.gov/CodeReviser>.

BP Cherry Point Refinery  
BART Compliance Order No. 7836, Revision 2  
May 13, 2015

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Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter 43.21B RCW.

DATED this 13<sup>th</sup> day of May 2015 at Olympia, Washington.



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Ranil Dhammapala, Ph.D.  
Acting Science and Engineering Section Manager  
Air Quality Program