STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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February 23, 2022

Mr. Eric R. Zimpfer
Vice President of Refining – Cherry Point
4519 Grandview Rd,
Blaine, WA 98230

Re: Permit No. PSD 02-04 Amendment 2 – Administrative Amendment

Dear Mr. Zimpfer:

The Washington State Department of Ecology's Air Quality Program (Ecology) is pleased to present you with the enclosed final Prevention of Significant Deterioration (PSD) permit Number PSD 02-04 Amendment 2 for BP Cherry Point Refinery. I have also enclosed a copy of the permit's Technical Support Document that describes the administrative changes.

If you have questions, please contact MengChiu Lim at (360) 407-6812 or mengchiu.lim@ecy.wa.gov.

Sincerely,

Robert Dengel
Deputy Program Manager, Air Quality Program

Enclosures

cc: Sahil Patel, BP Products North America Inc.
Chris Hanlon-Meyer, Ecology
Robyn Jones, Northwest Clean Air Agency (NWCAA)
EPA Region 10
James Miller, USFS
Kirsten King, NPS
Don Shepherd, NPS

DEPARTMENT OF ECOLOGY
State of Washington

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT

Issued To:	BP Cherry Point Refinery
Facility Location:	4519 Grandview Road Blaine, Washington 98230
Permit Number:	**PSD No. 02-04, Amendment 2**
Date of Permit Issuance:	**February 23, 2022**
Effective Date of Permit:	**February 23, 2022**

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code 173-400-700. Based upon the application submitted by the BP Cherry Point Refinery (BP) dated September 13, 2021, the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

PREPARED BY:

MENGCHIU LIM STATE OF WASHINGTON 50167 REGISTERED PROFESSIONAL ENGINEER

2/18/2022

MengChiu Lim, P.E. — Date
Science and Engineering Section
Air Quality Program

APPROVED BY:

2/23/2022

Robert Dengel — Date
Deputy Air Quality Program Manager
Washington Department of Ecology

Project Description

BP owns and operates the BP Cherry Point Refinery, which is located in the City of Blaine in Whatcom County, Washington.

For this permit amendment, BP proposes revisions to remove obsolete permit languages in PSD No. 02-04, Amendment 1. Ecology finds that the amendment meets the description of administrative revision according to WAC 173-400-750(3). See more discussion regarding the changes in the technical support document for this amendment.

This PSD No. 02-04, Amendment 2 revises the PSD No. 02-04, Amendment 1 issued on April 20, 2005. The original PSD 02-04 was issued on May 20, 2003, for the construction and operation of the units described below.

Unit Description
Naphtha Dehexanizer
Isom Hydrotreater (IHT) with a 13 MMBtu/hr IHO process heater
BenSat™ unit
Penex™ (Isomerization) unit, connections to existing processes and changes in tank services within the refinery
Boiler #5 – 363 MMBtu/hr

Approval Conditions

1. The IHT process heater and Boiler #5 shall be fueled by either natural gas or refinery fuel gas. Continuous compliance shall be monitored by maintaining a written log of the type of fuel burned in the IHT process heater and Boiler #5.

2. Emissions of NO_X from the IHT process heater shall not exceed 0.10 lb/MMBtu or 0.455 pounds per hour, both on a calendar day average.

   At least once during each calendar year, BP shall conduct NO_X compliance testing using EPA Reference Method 7E. During the compliance testing, the IHT process heater shall be fired at a rate that is representative of normal operating conditions at the time of the test.

3. Emissions of CO from the IHT process heater shall not exceed 70 ppmdv at 7 percent O_2 or 1.1 pounds per hour, both on a calendar day average.

   At least once during each calendar year, BP shall conduct CO compliance testing using EPA Reference Method 10, 10A, or 10B. During the compliance testing, the IHT process heater shall be fired at a rate that is representative of normal operating conditions at the time of the test.

4. Emissions of NO_X from Boiler #5 shall not exceed 10.1 pounds per hour on a calendar day average.

5. Except during startup, emissions of CO from Boiler #5 shall not exceed 18.1 pounds per hour on a calendar day average.

6. During startup, emissions of CO from Boiler #5 shall be limited to 50 pounds per hour averaged over the startup period.

   6.1. Startup periods are limited to 12 hours, except that if refractory work has been done during a maintenance shutdown, the period is limited to 30 hours.

   6.2. Startups claiming use of this condition shall be limited to six per calendar year.

   6.3. Emissions of CO during startup periods shall be monitored and included in the annual emissions reported each year pursuant to WAC 173-400-105(1).

7. Continuous compliance with the NO_X and CO emission limits for Boiler #5 shall be demonstrated by installing, calibrating, maintaining, and operating Continuous Emissions Monitoring Systems (CEMS) for NO_X, CO, and O_2. Each monitor must meet the appropriate performance specifications in 40 CFR 60, Appendix B, and the quality control/quality assurance requirements of 40 CFR 60, Appendix F.

8. BP shall submit the following reports and monitoring data to the Northwest Clean Air Agency (NWCAA).

   8.1. Submit a report monthly, within 30 days of the end of the calendar month, or on another schedule agreed to by NWCAA. At the least, the report shall include the following:

      8.1.1. Calendar date or monitoring period.

8.1.2. Monthly maximum of CO and NO_X emissions of IHT process heater and Boiler #5.

8.1.3. Days and duration for which data was not collected.

8.1.4. Reasons for which data was not collected.

8.1.5. A statement that BP burned no new fuels, no fuels from a new supplier, or no new fuel mixture.

8.2. BP shall maintain monitoring records on site for at least five years, and shall submit:

8.2.1. Excess emission reports to NWCAA, as discussed in Approval Condition 8.3.

8.2.2. Results of any compliance source tests.

8.3. For each occurrence of monitored emissions in excess of any condition, the monthly emissions report shall include the following:

8.3.1. The time of the occurrence.

8.3.2. Magnitude of the excess emission or process parameters.

8.3.3. The duration of the excess.

8.3.4. The probable cause.

8.3.5. Corrective actions taken or planned.

8.3.6. The name of any agency contacted.

9. Sampling ports and platform shall be provided on each stack, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate permanent and safe access to the test ports shall be provided.

10. Within 90 days of startup, BP shall identify operational parameters and practices that will constitute "good combustion practices" of the IHT process heater and Boiler #5. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA, or EPA. Emissions that result from a failure to follow the requirements of the O&M manual may be considered credible evidence that emission violations have occurred.

11. Access to the source by Ecology, NWCAA, or the EPA, shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act or the Washington State Clean Air Act.

12. This permit supersedes PSD 02-04, Amendment 1 issued on April 20, 2005.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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November 8, 2021

Eric R. Zimpfer
Vice President of Refining – Cherry Point
4519 Grandview Road
Blaine, WA 98230

Re: Prevention of Significant Deterioration Permit No. 5, Amendment 4 – Administrative Amendment

Dear Eric R. Zimpfer:

The Washington Department of Ecology's Air Quality Program is pleased to present you with the enclosed final Prevention of Significant Deterioration permit No. 5, Amendment 4, for BP Cherry Point Refinery. I have also enclosed a copy of the permit's Technical Support Document that describes the administrative changes.

If you have questions, please contact MengChiu Lim at (360) 407-6812 or mengchiu.lim@ecy.wa.gov.

Sincerely,

Rob Dengel
Deputy Air Quality Program Manager

Enclosures

cc: EPA Region 10
Chris Hanlon-Meyer, Ecology
Robyn Jones, NWCAA
Kirsten King, NPS
James Miller, USFS
Sahil Patel, BP Products North America Inc.
Don Shepherd, NPS

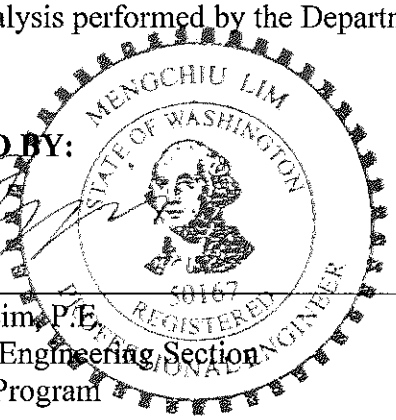
DEPARTMENT OF
ECOLOGY
State of Washington

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT

Issued To:	BP Cherry Point Refinery
Facility Location:	4519 Grandview Road Blaine, Washington 98230
Permit Number:	PSD No. 5, Amendment 4
Date of Permit Issuance:	November 8, 2021
Effective Date of Permit:	November 8, 2021

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code 173-400-700. Based upon the application submitted by the BP Cherry Point Refinery (BP) dated September 13, 2021, the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

PREPARED BY:



MengChiu Lim, P.E.
Science and Engineering Section
Air Quality Program

11/8/2021
Date

APPROVED BY:

Rob Dengel
Deputy Air Quality Program Manager
Washington Department of Ecology

11/8/2021
Date

Findings

1. BP has applied for an amendment of Prevention of Significant Deterioration (PSD) permit No. 5, Amendment 2 to modify the North Vacuum Heater at the BP Cherry Point Refinery. The modification includes replacing the piping inside the North Vacuum Heater and the existing heater burners with ultra-low nitrogen oxide (NO_X) burners, revising the maximum heat input rate of the heater from 77 MMBtu/hr to 117 MMBtu/hr. The project did not trigger major modification. However, amendment 3 also revises the NOx emission limit to be more consistent with the lower NOx emission limit established in OAC 273c issued by Northwest Clean Air Agency (NWCAA).
2. BP's analysis shows that the project emission increase is not significant, and therefore not subject to PSD review.
3. PSD No. 5, Amendment 3 removes hydrogen sulfide (H_2S) emission limits from the permit because NO_X is the only regulated pollutant that subject to PSD review under the original PSD No. 5 issued December 17, 1985.
4. PSD No. 5, Amendment 4 revises typographical errors in Condition No. 3 of the permit.
5. BP Products North America, Inc. (BP, formerly British Petroleum) operates a petroleum refinery in Ferndale, Washington, formerly owned by ARCO Petroleum Products Company (ARCO), and known as the BP Cherry Point Refinery.
6. Ecology finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

Approval Conditions

1. Limit fuel combusted in the North Vacuum Heater to natural gas and refinery fuel gas.

2. The maximum heat input rate of the North Vacuum Heater shall not exceed 117 MMBtu/hr, based on higher heating value and calendar day basis.

3. Do not allow NO_X emissions from the North Vacuum Heater to exceed the following applicable limits based on operating mode duration at any time, including start-up and shutdown.

   While operating in balanced (forced) draft mode, comply with one of the limits in 3.a., and the limit in 3.b.

   a. Sixty ppmvd NO_X at zero percent oxygen determined daily on a 30-day rolling average basis or 0.060 lb/MMBtu (HHV) determined daily on a 30-day rolling average basis.

   b. 7.0 lb/hr based on a calendar day average.

   While operating in natural draft mode for 30 or more consecutive days, comply with one of the limits in 3.c., and the limit in 3.d.

   c. Forty ppmvd NO_X at zero percent oxygen determined daily on a 30-day rolling average basis or 0.040 lb/MMBtu (HHV) determined daily on a 30-day rolling average basis.

   d. 4.7 lb/hr based on a calendar day average.

   While operating in natural draft mode for fewer than 30 consecutive days, comply with one of the limits in 3.a., and the natural draft mode mass emission rate limit in 3.d.

   Determine compliance with this condition by installing, calibrating, maintaining, and operating a CEMS to measure NO_X and O_2 in North Vacuum Heater exhaust. The monitor must meet the appropriate requirements of 40 CFR 60 Subpart Ja, 40 CFR 60 Appendices B and F, NWCAA Section 367, and NWCAA Appendix A.

   Determine the F-factor of the fuel gas stream no less frequently than once per calendar week according to the monitoring requirements in 40 CFR 60.107a(d)(1)-(4). When electing to comply with the heating value based limits in 3.a. and 3.c., determine the F factor of the fuel gas stream no less frequently than once per day according to the monitoring requirements in 40 CFR 60.107a(d)(1)-(4).

4. BP shall maintain records of all measurements from the continuous monitoring system, all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices. The records shall be retained for at least five years following the date of such measurements, maintenance, reports, and records generated.

5. Any activity that is undertaken by the company or others, in a manner that is inconsistent with this determination shall be subject to department enforcement under applicable

regulations. Nothing in this determination shall be construed to relieve the company of its obligations under any state, local, or federal laws or regulations.

6. Access to the source by EPA, state or local regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow such access is ground for revocation of this permit.

WASHINGTON STATE DEPARTMENT OF ECOLOGY
POST OFFICE BOX 47600
OLYMPIA, WASHINGTON 98504-7600

IN THE MATTER OF:	**]**	**NO. PSD 07-01, Amendment 2**
	]	
BP Cherry Point Refinery	**]**	**APPROVAL**
4519 Grandview Road	**]**	**OF PSD APPLICATION**
Blaine, Washington 98230	**]**	

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code (WAC) 173-400-700 through 750. Based upon the complete application submitted by the BP Cherry Point Refinery (BP) dated May 2007, the complete application for Modification 1 received April 1, 2009, the application for Modification 2 received January 26, 2015, and additional information received on July 14, 2015, and the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

FINDINGS

1. The BP Cherry Point Refinery (BP) has applied for an increase to the short-term emission limit for particulate matter less than ten microns (PM_{10}) imposed on Boilers 6 and 7 by the current permit, PSD 07-01 Amendment 1. This increase is needed because the initial limit was based on the average of a data set of expected emission levels rather than on an upper confidence level that would include the full range of valid data. Also, PM_{10} emissions tests of these boilers show a high degree of variability in the measurement of the condensable portion of PM_{10} that does not seem to be correctable. A new annual limit is being established based on the old hourly emission rate that will assure that the allowable annual emissions of PM_{10} do not increase compared to the prior permit. EPA Method 5i is requested to be allowed as an option to analyze filterable particulate. No changes to any other air pollutant limits are requested. No physical changes or changes in the method of operation are requested.

2. Amendment 1 allowed BP to increase the short-term sulfur dioxide (SO_2) emission limit imposed on the two new boilers by the initial PSD permit. This increase was needed to address the variability of sulfur concentration in the refinery gas fuel. A new annual limitation assured that annual emissions of SO_2 did not increase. No changes to any other air pollutant emission limits were requested. BP did not propose any physical or operational changes to the boilers.

3. The original permit allowed BP to shut down two existing boilers (Boilers 1 and 3) and replace them with two new boilers (Boilers 6 and 7). This is referred to as the Boiler Replacement Project.

4. The BP Cherry Point Refinery is located in Whatcom County approximately seven miles southeast of Blaine, Washington. The coordinates of the project are about UTM 10 519600E and 5414800N.

5. The BP Cherry Point Refinery is located within a Class II area that is currently designated in attainment for all national and state air quality standards.

6. Ecology, U.S. EPA Region 10, and the Federal Land Managers (FLMs) received the Boiler Replacement Project PSD permit Amendment 1 application on about April 1, 2009. The application was determined to be complete as of May 1, 2009.

7. Boilers 1 and 3 were each rated at 330 MMBtu per hour and 150,000 pounds steam per hour. Boilers 6 and 7 are each rated at 363 MMBtu per hour and 250,000 pounds steam per hour. Each of the old boilers and the replacement boilers provide(d) steam at 750°F and 620 psig.

8. The boilers burn a combination of refinery fuel gas and natural gas. Various gases generated at the refinery are routed to the refinery fuel mix drum and used for fuel. Supplemental natural gas is added to the refinery fuel mix drum to meet the refinery fuel demand.

9. Because the BP Cherry Point Refinery is an existing major stationary source, any net emissions increase of a regulated pollutant greater than its Significant Emission Rate (SER) qualifies the proposed project as a major modification. As a result, the project would be subject to PSD review under WAC 173-400-700 for that pollutant.

10. Potential regulated pollutants for the Boiler Replacement Project are shown in Table 1. They were nitrogen oxides (NO_X), carbon monoxide (CO), SO_2, volatile organic carbon compounds (VOCs), PM_{10}, and particulates of any diameter (PM). Amendment 1 changed the SO_2 short-term emission rate allowed for the two boilers combined from 27.2 to 78.6 pounds per hour (lb/hr) on a 3-hour average basis. Amendment 2 changes the PM_{10} short-term emission rate allowed for the two boilers combined from 6.8 to 10.0 lb/hr on a calendar day basis and adds a new annual limit of 29.8 tons per year (tpy) (combined). The significance analysis is for the initial permit, not the amendments. Amendments 1 and 2 do not change the annual potential to emit of any pollutant.

Table 1. New Boilers Criteria Pollutant Emissions (Combined)

Pollutant	Emission Rate		SER	Significant?	W/Contemporaneous Emission Increases and Decreases	Significant?
	lb/hr	tpy*	tpy		tpy	
NO_X	7.9	34.4	40	No	---	---
CO	26.5	116.2	100	Yes	298.3	Yes
SO_2	78.6	119.3	40	Yes	124.9	Yes
PM_{10}	10.0	30.0	15	Yes	58.3	Yes
VOC	3.9	17.2	40	No	---	---
Sulfuric acid	0.6	2.6	7	No	---	---

* Includes both combustion emissions and fugitive equipment leaks.

11. Regulated pollutants with net emission increases greater than their PSD Significant Emission Rate (SER) are subject to regulation under PSD. For the Boiler Replacement Project, the PSD regulated pollutants were CO, SO_2, and PM_{10}. Also, all particulates (PM and PM_{10}) are considered to be PM_{10}.

12. The emissions of all air pollutants from the BP Cherry Point Refinery are subject to review under Chapter 173-400 WAC and Chapter 173-460 WAC. Chapter 173-400 WAC includes provision for PSD review (WAC 173-400-700). This permit considers only PSD pollutants that have a significant net emission increase due to the Boiler Replacement Project when considered under PSD regulations. All other pollutants are regulated under state regulations by the Northwest Clean Air Agency (NWCAA).

13. The NSPS requirements of 40 CFR 60 Subpart Db applies to NO_X emissions and to monitoring and reporting. Because the fuel is gaseous, Subpart Db does not have applicable PM_{10} requirements. There are no applicable NSPS requirements for CO. 40 CFR 60 Subpart Ja has applicable refinery gas H_2S fuel content limits. BP will also include the proposed boilers in its leak detection and repair (LDAR) program based on 40 CFR 63 Subpart CC and in accordance with NWCAA OAC 1001c Condition 8.

14. Best Available Control Technology (BACT) determinations are shown in Table 2.

Table 2. BACT Determinations

Pollutant	Best Available Control	Emission Rate (per boiler)
CO	Proper combustion	13.3 lb/hr based on 0.0365 lb/MMBtu (50 ppm)
SO_2	NSPS quality refinery fuel gas	39.3 lb/hr on a 3-hr average 13.6 lb/hr annual average based on 0.0375 lb/MMBtu (17.8 gr S/100 scf in fuel gas) in Amendment 1.
PM_{10}	Proper combustion	5.0 lb/hr based on 0.014 lb/MMBtu of fuel gas (99% upper confidence level) in Amendment 2.

15. Allowable increases in emissions from the Boiler Replacement Project will not cause or contribute to air pollution in violation of any National Ambient Air Quality Standard (NAAQS). Table 3 shows CO, SO_2, and PM_{10} impacts are below their respective NAAQS and SILs. Short-term SO_2 and PM_{10} emissions reflect Amendments 1 and 2. Annual SO_2 and PM_{10} emissions are unchanged from the original application. All NO_X, CO, and PM_{10} emission rates are unchanged from the original application.

Table 3. Maximum Predicted Criteria Pollutant Concentrations (µg/m³)

Pollutant	Avg. Time	Max. Conc.	SIL*	Monitoring De Minimis Conc.	Max. Conc. BP Refinery & Other Regional Industrial Sources	Back-ground†	Total	Standard	
NO_2	Annual	0.22	1	14	0.22	‡	0.22	100	NAAQS
SO_2	1-hr	127	None	None	127	149	276	1,050	WAAQS¶
	3-hr	47	25	None	697	92	789	1,300	NAAQS
	24-hr	9.3	5	13	111	43	154	365	NAAQS
	24-hr	9.3	5	13	111	43	154	262	WAAQS
	Annual	1.47	1	None	13.6	13	26.6	80	NAAQS
	Annual	1.47	1	None	13.6	13	26.6	52	WAAQS
CO	1-hr	63.74	2,000	None	63.7	§	63.7	40,000	NAAQS
	8-hr	19.70	500	575	19.7	§	19.7	10,000	NAAQS
PM_{10}	**24-hr**	**1.59**	**5**	**10**	**1.59**	**§**	**1.59**	**150**	**NAAQS**
	Annual	0.40	1	None	0.40	§	0.40	50	WAAQS

∗ SIL = Significant impact Level, per the EPA NSR Manual, Draft 1990, Table C-4.

† Background concentrations reflect the highest observations from 2002–2006 collected at a BP SO_2 monitoring station located adjacent to BP's meteorological monitoring tower.

‡ Pollutants for which the project did not trigger PSD were modeled only with the two replacement boilers and were not combined with a background concentration for comparison with the ambient standard.

¶ NWCAA has 655 ug/m³ 1-hr average and 2,096 ug/m3 5-minute average standards for SO_2. Modeling shows compliance with the 1-hr standard. Multiplication of the 1-hr concentration impact by 1.64 (factor recommended by Turner)[1] indicates 453 ug/m3, which meets the 5-minute standard.

§ Pollutants for which a NAAQS analysis was not required were not modeled with other regional sources and were not combined with a background concentration for comparison with the ambient standard.

16. Allowable increases in emissions from the project will not cause or contribute to air pollution in violation of any PSD increment. Table 4 shows the increment consumption for SO_2 emissions. Table 3 shows that no other regulated pollutant triggered its PSD modeling SIL. This removes any further modeling requirements, including increment consumption analysis.

[1] D. Bruce Turner, *Workbook of Atmospheric Dispersion Estimates*, CRC Press, first published in 1970.

Table 4. Maximum Predicted SO_2 Concentrations and Comparison w/Applicable PSD Increments		
Avg. Period	**BP Refinery & Other Regional Industrial Sources ($\mu g/m^3$)**	**PSD Increment ($\mu g/m^3$)**
3-hr	389	512
24-hr	75	91
Annual	13.6	20
Note: There is no PSD increment for 1-hr or 5-mn avg. periods.		

17. Class I area distances and concentrations are shown in the following table.

Table 5. Predicted Pollutant Concentrations for Class I Areas							
Class I Area of Interest	**Distance (km)**	**Maximum Predicted Concentration ($\mu g/m^3$)**					
		NO_2	**PM_{10}**		**SO_2**		
		Annual Avg.*	**24-hr Avg.**	**Annual Avg.**	**3-hr Avg.**	**24-hr Avg.**	**Annual Avg.**
Alpine Lakes Wilderness	162	0.0000201	0.0202	0.0011	0.0620	0.0171	0.0007
Glacier Peak Wilderness	112	0.0000567	0.0159	0.0012	0.0821	0.0184	0.0009
Goat Rocks Wilderness	262	0.00000236	0.0133	0.0004	0.0167	0.0058	0.0002
Mount Adams Wilderness	300	0.00000151	0.0105	0.0003	0.0140	0.0049	0.0001
Mount Rainier National Park	218	0.00000896	0.0250	0.0008	0.0230	0.0113	0.0005
N. Cascades National Park	80	0.000197	0.0199	0.0016	0.0975	0.0416	0.0015
Olympic National Park	106	0.000307	0.0516	0.0022	0.1592	0.0505	0.0023
Pasayten Wilderness	126	0.0000759	0.0146	0.0010	0.0494	0.0206	0.0008
Maximum Concentration in Mandatory Class I Areas	**N/A**	**0.00037**	**0.0516**	**0.0022**	**0.1592**	**0.0505**	**0.0023**
Mount Baker Wilderness†	60	0.000421	0.0342	0.0029	0.3037	0.1149	0.0031
EPA Proposed SIL‡		*0.1*	*0.3*	*0.2*	*1*	*0.2*	*0.1*
FLM Recommended SIL‡		*0.03*	*0.27*	*0.08*	*0.48*	*0.07*	*0.03*
Class I Area PSD Increment¶		*2.5*	*8*	*4*	*25*	*5*	*2*

* NO_X was conservatively assumed to be 75% converted to NO_2, per Section 6.2.3 of EPA's Guideline on Air Quality Models (Appendix W to 40 CFR Part 51).

† Mount Baker Wilderness Area is not a Class I area, it is included in the analysis because FLMs have requested its inclusion for their information.

‡ SIL = Significant Impact Level; EPA proposed and FLM recommended from the Federal Register, Vol. 61, No. 142, p. 38292, July 23, 1996.

¶ 40 CFR 52.21(c), adopted by reference in WAC 173-400-720(4)(a)(v).

18. Allowable emissions will not cause a significant visibility impact in:

    18.1. The surrounding Class I areas: The highest modeled impacts were 2.39 percent and 1.46 percent degradation in the Olympic National Park and North Cascades National Park, respectively. FLMs reviewed both the original and amended permit applications and considered the project to be below the "concern" threshold.

    18.2. Nearby Class II wilderness and scenic areas: The highest modeled impact was 2.90 percent degradation in the Mt. Baker Wilderness Area. FLM guidance considers this to be below the "concern" threshold.

19. The highest modeled deposition in the surrounding Class I areas is 0.0007 kilograms nitrogen and 0.0021 kilograms sulfur per hectare per year in the North Cascades National Park. The nitrogen deposition level is 14 percent of the "concern" threshold in FLM guidance. The sulfur deposition level is 42 percent of the FLM "concern" threshold. Amendment 2 does not change annual emissions, so it does not affect this analysis.

20. No significant effect on industrial, commercial, or residential growth in the area is anticipated as a result of this project.

21. Ecology finds all requirements for PSD permitting have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS

Fuels

1. Boilers 6 and 7 shall burn only refinery fuel gas or natural gas.

Emission Limits

2. CO emissions from Boiler 6 or 7 (each) shall not exceed:

    2.1. 13.3 lb/hr based on a calendar day average.

3. SO_2 emissions from Boiler 6 or 7 (each) shall not exceed:

    3.1. 39.3 lb/hr based on a 3-hr average.

    3.2. 21.4 lb/hr based on a calendar day average.

    3.3. 59.6 tpy on a 12-month rolling average.

4. PM_{10} emissions from Boiler 6 or 7 (each) shall not exceed:

    4.1. 5.0 lb/hr based on a calendar day average.

    4.2. 14.8 tpy on a 12-month rolling average.

Initial Compliance Demonstration and Notification

5. BP shall notify Ecology and NWCAA in writing at least 30 days prior to initial start-up of Boilers 6 and 7.

6. For CO emissions from Boilers 6 and 7 exhaust stacks, BP will demonstrate initial compliance with Condition 2.1.

    6.1. BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate (steam rate) at which Boilers 6 and 7 will be operated, but not later than 180 days after initial start-up.

    6.2. Boilers 6 and 7 are to be operated at an average steam load as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.

    6.3. Determine compliance using 40 CFR 60 Appendix A Method 10, 10A, 10B, or equivalent test method if approved in advance by Ecology.

    6.4. A typical mix of normal refinery gas and natural gas fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 6.5.

    6.5. BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

7. For SO_2 emissions from Boilers 6 and 7 exhaust stacks, BP will demonstrate initial compliance with Condition 3.1.

    7.1. BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which Boilers 6 and 7 will be operated, but not later than 180 days after initial start-up.

    7.2. Boilers 6 and 7 are to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.

    7.3. Determine compliance using 40 CFR 60 Appendix A Method 6 or 6C, or equivalent test method if approved in advance by Ecology.

    7.4. A typical mix of normal refinery gas and natural gas fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 7.5.

    7.5. BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

8. For PM/PM_{10} emissions from Boilers 6 and 7 unit exhaust stacks, BP will demonstrate initial compliance with Condition 4.1.

    8.1. BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which Boilers 6 and 7 will be operated, but not later than 180 days after initial start-up.

    8.2. Boilers 6 and 7 are to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.

    8.3. Determine compliance using 40 CFR 60 Appendix A Method 5 or Method 5i for the front half, and 40 CFR 51 Appendix M Method 202 for the back half, or equivalent test method if approved in advance by Ecology.

    8.4. A typical mix of normal refinery gas and natural gas fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 8.5.

    8.5. BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

Compliance Monitoring and Testing

9. For CO emissions from Boilers 6 and 7 exhaust stacks, BP will demonstrate compliance with Condition 2.1.

    9.1. Monitor using a CEMS that measure and records CO emissions from Boilers 6 and 7 exhaust stacks and that meets the requirements of Condition 12.1.

10. For SO_2 emissions from Boilers 6 and 7 exhaust stacks, BP will demonstrate routine compliance with Condition 3.1.

    10.1. Test once per calendar month for total sulfur in the boiler fuel using ASTM Test Method D-5504, EPA TO-15 or another method approved by Ecology. A minimum of three samples, taken at least 15 minutes apart, shall be run per monthly test.

    10.2. Monitor fuel H_2S content using a CEMS that continuously monitors and records the concentration (dry basis) of H_2S in the fuel gas. It shall meet the requirements of Condition 12.2.

    10.3. As an alternative to Conditions 10.1 and 10.2, BP may monitor using a CEMS that measures and records SO_2 emissions from the Boilers 6 and 7 exhaust stacks and meets the requirements of Condition 12.3.

11. For particulate emissions from the Boilers 6 and 7 exhaust stacks, BP will demonstrate routine compliance with Condition 4.1.

    11.1. Compliance shall be demonstrated by an annual emissions test on each exhaust stack using the methods indicated in Condition 8.3. After three consecutive years of annual tests on each boiler stack have demonstrated emissions are less the 5.0 lb/hr, testing of each boiler stack may be reduced to once every five years. If a test demonstrates emissions are greater than 5.0 lb/hr, resumption of annual testing is required for the unit until 3 consecutive years demonstrate compliance.

    11.2. Continuous compliance with the daily and annual limits shall be demonstrated by applying an emission factor developed during the most recent source test and fuel usage for the period.

12. CEMS:

    12.1. CEMS for CO shall satisfy the requirements contained in 40 CFR Part 60, Appendix B, Performance Specification 4 and 40 CFR Part 60, Appendix F, Quality Assurance Procedures.

    12.2. CEMS for H_2S shall satisfy the requirements contained in 40 CFR Part 60, Appendix B, Performance Specification 7 and 40 CFR Part 60, Appendix F, Quality Assurance Procedures. Method 11, 15, 15A, 16, or an alternative approved by Ecology shall be used for conducting the relative accuracy evaluations.

    12.3. CEMS for SO_2 shall satisfy the requirements contained in 40 CFR Part 60, Appendix B, Performance Specification 2 and 40 CFR Part 60, Appendix F, Quality Assurance Procedures.

    12.4. CEMS for O_2 shall satisfy the requirements contained in 40 CFR Part 60, Appendix B, Performance Specification 3 and 40 CFR Part 60, Appendix F, Quality Assurance Procedures.

Start-up Conditions

13. Start-up is defined as starting the boiler from an inactive cold state, and ending when operating above 91 MMBtu HHV/hour or after eight hours of operation, whichever is sooner.

    13.1. Emission limits for CO in Condition 2 are relieved during start-up periods.

    13.2. Emissions of CO during start-up periods shall be limited to 50 lb/hr averaged over the start-up period.

    13.3. Emissions of CO during start-up periods shall be monitored and included in the annual emissions reported each year pursuant to WAC 173-400-105(1).

Recordkeeping, Notification, and Reporting

14. BP shall submit the following reports and monitoring data to NWCAA and Ecology. Once this permit has been incorporated in to BP's Title V permit, these submittals no longer need to be sent to Ecology.

    14.1. Submit a report monthly, within 30 days of the end of the calendar month, or on another schedule agreed to by Ecology and NWCAA. At the least, the report shall include the following:

        14.1.1. Calendar date or monitoring period.

        14.1.2. Monthly maximum of CO, SO_2, and PM_{10} emissions for each boiler for the reporting month in accordance with Approval Conditions 2, 3, and 4, respectively. Emissions shall be determined based on the averaging time of the applicable limit in approval conditions section.

        14.1.3. Monthly total sulfur analysis results and annual SO_2 emissions on a 12-month rolling average in accordance with Approval Condition 3.3.

    14.2. In addition, required report shall include:

        14.2.1. Days and duration for which data was not collected.

        14.2.2. Reasons for which data was not collected.

    14.3. BP shall maintain monitoring records on-site for at least five years, and shall submit:

        14.3.1. Excess emission reports to NWCAA, as discussed in Approval Condition 14.4.

        14.3.2. Results of any compliance source tests.

        14.3.3. Results of any CEM RATAs.

    14.4. For each occurrence of monitored emissions in excess of any condition, the monthly emissions report shall include the following:

        14.4.1. The time of the occurrence.

        14.4.2. Magnitude of the emission or process parameters excess.

        14.4.3. The duration of the excess.

        14.4.4. The probable cause.

        14.4.5. Corrective actions taken or planned.

        14.4.6. The name of any agency contacted.

Standard Requirements

15. Sampling ports and platforms shall be provided on the Boilers 6 and 7's stacks, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate, permanent, and safe access to the test ports shall be provided.

16. Within 90 days of start-up of the boilers, BP shall identify operational parameters and practices that will constitute "good combustion practices" for Boilers 6 and 7. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA or the EPA. If a failure to follow the requirements of the manuals results in excess emissions that failure may be considered credible evidence that the event was caused by poor or inadequate operation or maintenance.

17. Access to the source by Ecology, NWCAA, or the EPA shall be permitted upon request. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act and the Washington State Clean Air Act.

18. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless Ecology extends the 18-month period, pursuant to WAC 173-400-730(5).

19. A PSD permit, any conditions contained in a PSD permit, or the denial of PSD permit may be appealed to the pollution control hearings board as provided in chapter 43.21B RCW.

Prepared by:

Robert C. Burmark — 2/24/2016

Robert C. Burmark, P.E.
Science and Engineering Section
Air Quality Program

Date

Approved by:

2/24/16

Stuart A. Clark
Air Quality Program Manager
Washington State Department of Ecology

Date

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DEPARTMENT OF ECOLOGY
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April 21, 2022

Eric R. Zimpfer, Vice President of Refining
BP Cherry Point Refinery
4519 Grandview Road
Blaine, WA 98230

Re: Permit No. PSD No. 7, Amendment 1 – Permit Amendment

Dear Eric R. Zimpfer:

The Washington Department of Ecology's Air Quality Program (Ecology) is pleased to present you with the enclosed final Prevention of Significant Deterioration (PSD) permit Number PSD No. 7, Amendment 1 for BP Cherry Point Refinery. I have also enclosed a copy of the permit's Technical Support Document that describes the changes.

If you have questions, please contact MengChiu Lim at (360) 407-6812 or mengchiu.lim@ecy.wa.gov.

Sincerely,

Robert Dengel
Deputy Air Quality Program Manager

Enclosures

cc: EPA Region 10
Chris Hanlon-Meyer, Ecology
Robyn Jones, NWCAA
Kirsten King, NPS
James Miller, USFS
Sahil Patel, BP Products North America Inc.
Don Shepherd, NPS

DEPARTMENT OF ECOLOGY
State of Washington

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT

Issued To:	BP Cherry Point Refinery
Facility Location:	4519 Grandview Road Blaine, Washington 98230
Permit Number:	**PSD No. 7, Amendment 1**
Date of Permit Issuance:	**April 21, 2022**
Effective Date of Permit:	**April 21, 2022**

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code 173-400-700. Based upon the application and fees submitted by the BP Cherry Point Refinery (BP) with the fees received on September 13, 2021, the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

PREPARED BY:

MENGCHIU LIM STATE OF WASHINGTON 50167 REGISTERED PROFESSIONAL ENGINEER

4/21/2022

MengChiu Lim, P.E. — Date
Science and Engineering Section
Air Quality Program

APPROVED BY:

4/21/2022

Robert Dengel — Date
Deputy Air Quality Program Manager
Washington Department of Ecology

Project Description

BP owns and operates the BP Cherry Point Refinery, which is located in the city of Blaine in Whatcom County, Washington.

BP applied for an amendment of their PSD No. 7 permit to:

- Revise Condition 2 to remove the hourly average firing rate limit of 60 million British thermal units per hour (MMBtu/hr) for the Naphtha Hydrodesulfurization (NHDS) Heater. This heater was never constructed as part of the Clean Gasoline Project that installed a new gasoline reformer (#2 Reformer) unit at the refinery.
- Revise Condition 4 to change the 160 parts per million (ppm) hydrogen sulfide (H_2S) three-hour rolling average limit to 162 ppm H_2S three-hour rolling average limit.
- Revise Condition 4 to change the 90 ppm H_2S monthly average limit to a more stringent 50 ppm H_2S 24-hour average limit.
- Remove Condition 3 that requires continuous oxygen monitor on the #2 Reformer Heaters.
- Revise Condition 1 to clarify the existing oxides of nitrogen (NO_X) and carbon monoxide (CO) mass-based emissions limits of pounds per hour (lb/hr) and tons per year (tpy).

This PSD No. 7, Amendment 1 revises the PSD No. 7 issued March 13, 1986, for the emission unit described below.

- 340 MMBtu/hr #2 Reformer Heaters

Approval Conditions

1. Emissions from the #2 Reformer Heaters shall not exceed any of the following limitations:

   a. 9.5 lb/hr CO, 60-minute rolling average

   b. 41.7 tpy CO, 12-month rolling total

   c. 27.2 lb/hr NO_X (as NO_2), 60-minute rolling average

   d. 119.1 tpy of NO_X (as NO_2), 12-month rolling total

2. Firing of the #2 Reformer Heaters shall not exceed 340 MMBtu/hr, based on the hourly average calculated heat content of the fuel.

3. H_2S in the fuel gas to the #2 Reformer Heater shall not exceed:

   a. 162 ppm, 3-hour rolling average, and

   b. 50 ppm, 24-hour rolling average.

4. A continuous H_2S monitor shall be installed on the fuel feed line and operated according to Performance Specification 7 (40 CFR 60, Appendix B). H_2S records shall be kept for a minimum of two years, and made available for inspection upon request.

5. Any activity, which is undertaken, by the company or other, in a manner, which is inconsistent with this determination, shall be subject to department enforcement under applicable regulations. Nothing in this determination shall be construed to relieve the company of its obligations under any state, local, or federal laws or regulations.

6. Access to the source by EPA, state, or local regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow such access is ground for revocation of this permit.

7. This permit supersedes PSD No. 7.

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January 24, 2022

Eric R. Zimpfer
Vice President of Refining – Cherry Point
4519 Grandview Rd,
Blaine, WA 98230

Re: Permit No. PSD 10-01, Amendment 1 – Administrative Amendment

Dear Eric R. Zimpfer:

The Washington Department of Ecology's Air Quality Program (Ecology) is pleased to present you with the enclosed final Prevention of Significant Deterioration (PSD) permit No. 10-01, Amendment 1 for BP Cherry Point Refinery. I have also enclosed a copy of the permit's Technical Support Document that describes the administrative changes.

If you have questions, please contact MengChiu Lim at 360-407-6812 or mengchiu.lim@ecy.wa.gov.

Sincerely,

Robert Dengel
Deputy Air Quality Program Manager

Enclosures

cc: EPA Region 10
Chris Hanlon-Meyer, Ecology
Robyn Jones, NWCAA
Kirsten King, NPS
James Miller, USFS
Sahil Patel, BP Products North America Inc.
Don Shepherd, NPS

DEPARTMENT OF
ECOLOGY
State of Washington

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT

Issued To:	BP Cherry Point Refinery
Facility Location:	4519 Grandview Road Blaine, Washington 98230
Permit Number:	**PSD No. 10-01, Amendment 1**
Date of Permit Issuance:	**January 24, 2022**
Effective Date of Permit:	**January 24, 2022**

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code 173-400-700. Based upon the application and fees submitted by the BP Cherry Point Refinery (BP) with the fees received on September 13, 2021, the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

PREPARED BY:

MENGCHIU LIM STATE OF WASHINGTON 50167 REGISTERED PROFESSIONAL ENGINEER

1/24/2022

MengChiu Lim, P.E. — Date
Science and Engineering Section
Air Quality Program

APPROVED BY:

1/24/2022

Robert Dengel — Date
Deputy Air Quality Program Manager
Washington Department of Ecology

Findings

1. On September 13, 2021, with additional information dated December 22, 2021, BP has applied for amendment of Prevention of Significant Deterioration (PSD) permit No. 10-01 for the Clean Fuels Project (Project) at the BP Cherry Point Refinery.

2. This request is as follows:

   a. Remove Condition 15 since the notification requirement for commencement of construction and initial heater/furnace firing dates have already been met.

   b. Remove Condition 19 since construction of the project was commenced with the period and has already been completed.

   c. Remove Conditions 21 and 22 since the public review and comment period of the final permit determination has already elapsed.

   d. Revise Condition 5.1 to state, "Testing shall be conducted within 13 months of the previous source test date using the methods and procedures in Condition 4." This change allows for more flexibility in source test scheduling ahead of the prescribed 11-month minimum in the existing permit. It also aligns with similar changes being made to source test language in Order of Approval to Construct (OAC) permits with NWCAA.

   e. Revise Condition 5.2 to state, "after three consecutive years of annual tests have demonstrated compliance, testing may be reduced to once every five years, and shall be conducted within 61 months of the previous source test data." This addition helps clarify when testing should occur similar to the revision above, aligns with similar changes being made to source test language in OAC permit with NWCAA.

3. This change is not a major modification; therefore, a new Best Available Review Technology and impact review is not triggered. This change is considered an administrative amendment thus no public comment period is required. See technical support document for prior determination.

4. The application was determined to be complete as of December 27, 2021.

5. Ecology issued PSD 10-01 on December 13, 2010, to approve the "Clean Fuels Project." The project was to install and operate new equipment to meet the new federal Ultra-Low Sulfur Diesel (ULSD) specifications for non-road equipment and benzene content for gasoline. Post project, the diesel fuel's sulfur content is limited to 15 part per million.

6. The project removes up to 15 long tons of sulfur per day from refinery's non-road diesel fuel product.

7. BP is located in Whatcom County approximately seven miles southeast of Blaine, Washington. The coordinates of the project are about UTM Zone 10 519600E and 5414800N.

8. BP is located within a Class II area that is currently designated in attainment for all national and state air quality standards.

9. Ecology, EPA Region 10, and the Land Managers received the Project PSD permit application on about April 21, 2010. BP submitted additional information dated July 21, 2010, in response to questions from Ecology. The application was determined to be complete as of August 24, 2010.

10. The Project has two primary components:

    a. A new diesel hydro-desulfurization (#3 DHDS) processing unit to provide additional treatment to up to 25,000 barrels per day of existing diesel fuel production. It has a 28 million BTU per hour (MMBtu/hr) charge heater.

    b. A new hydrogen plant (#2 Hydrogen Plant) to produce up to 40 million standard cubic feet (MMSCFD) per day of synthesized hydrogen for the new #3 DHDS and other existing refinery operations. It will also purify up to four MMSCFD of hydrogen from existing refinery sources. A Steam Methane Reformer (SMR) furnace with a heat input capacity of 496 million BTU/hr is the main source of combustion emissions. The new hydrogen plant also has a flare system to combust off specification gases associated with start-up, shutdown, and upset conditions. During normal operations, this flare will have limited use.

11. The Project will also retrofit the existing First Stage Fractionator Reboiler (one of the four heaters at the hydrocracker) with Ultra Low NO_X Burners (ULNBs).

12. The Project will burn a combination of refinery fuel gas and natural gas. Because there is a limited supply of refinery fuel gas at Cherry Point Refinery, natural gas is routinely blended with refinery fuel gas in the mix drum. When sufficient refinery fuel gas is not available to meet all refinery needs, natural gas is used.

13. Because BP is an existing major stationary source, any net emissions increase of a regulated pollutant greater than its Significant Emission Rate (SER) qualifies the proposed Project as a major modification. As a result, the Project would be subject to PSD review under WAC 173-400-700 for that pollutant. Additionally, the Project could be subject to federal PSD review if it qualifies as a major modification under federal rules [40 CFR 52.21(b)(2)(i), 40 CFR 52.21(b)(3)(i), and 40 CFR 52.21(b)(23)(i)].

14. BP conducted a two-step PSD applicability analysis where Step 1 determines emissions increases due to the Project (including increases from affected equipment). Step 2 combines these Project increases with other contemporaneous increases and decreases to determine the Project's Significant Net Emissions increase. The details of this analysis are available in the Technical Support Document prepared for the original permit.

15. Potential regulated pollutants for the proposed Project are shown in Table 1. They are nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic compounds (VOC), particulates less than 10 microns in diameter (PM_{10}), particulates less than 2.5 microns in diameter ($PM_{2.5}$), and particulates of any diameter (PM). For this permit, PM is considered equal to PM_{10}. Under federal PSD regulations at the time, condensables were not considered as part of PM, PM_{10}, or $PM_{2.5}$. Under state PSD regulations at time, condensables were considered part of PM_{10}. The state PSD regulations do not consider $PM_{2.5}$

at all at the time of the original permit. After the application was considered complete, EPA added condensable to $PM_{2.5}$ emissions.

Table 1: Summary of Project Emissions and Significant Net Emissions

Pollutant	Emission Rate (tpy[1])	SER (tpy)	Significant?	With Contemporaneous Emission Increases and Decreases (tpy)	Significant?
NO_X	61	40	Yes	34	No
CO	77	100	No	---	---
SO_2	36	40	No	---	---
PM (filterable)	9	25	No	---	---
PM_{10} (filterable)	9	15	No	---	---
PM_{10} (total)	32	15	**Yes**	32	**Yes[2]**
$PM_{2.5}$ (filterable)[3]	8	10	No	---	---
VOC	35	40	No	---	---
Sulfuric acid	1.5	7	No	---	---

[1] Includes both combustion emissions and fugitive equipment leaks.
[2] Significant under Washington State PSD regulations only; not current federal regulations.
[3] On December 21, 2010, in 75 FR 80118 EPA issued the final rule containing a new test method for PM to include condensables in determining the $PM_{2.5}$ emissions. This was after the application was determined to be complete.

16. Regulated pollutants with net emissions increases greater than their PSD SER are subject to regulation under PSD. For this project, the only PSD regulated pollutant is total PM_{10} under WAC 173-400-720.

Approval Conditions

Ecology finds all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

For the #2 Hydrogen Plant

1. Fuels combusted in the Steam Methane Reformer Furnace shall be limited to PSA off gas and natural gas.

2. Heat input to the Steam Methane Reformer Furnace shall not exceed 496 MMBtu/hr HHV, based on a 365-day rolling average.

3. Particulate matter (PM_{10}, filterable and condensable) from the Steam Methane Reformer Furnace stack shall not exceed any of the following emission limits:

    3.1. 4.96 lb/hr

    3.2. 0.010 lb/MMBtu

    3.3. Compliance with this condition shall be determined by the average of three test runs conducted during periodic source testing required under Condition 5.

4. BP shall demonstrate compliance with Condition 3.

    4.1. The furnace shall be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.

    4.2. Determine compliance using 40 CFR 60 Appendix A Method 5 front half, and 40 CFR 51 Appendix M Method 202 for the back half, or an alternative test method if approved in advance by Ecology or NWCAA.

    4.3. A typical mix of fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 4.4.

    4.4. BP will submit a test plan to Ecology or NWCAA for approval at least 30 days prior to performance testing.

5. BP shall demonstrate routine compliance with Condition 3.

    5.1. Demonstrate compliance by conducting annual source testing within 13 months of the previous source testing date using the methods and procedures described above.

    5.2. If three consecutive annual source tests demonstrate compliance, source testing frequency may be reduced to once every five years, and within 61 months of the previous source testing date. If a source test demonstrates noncompliance, a retest is

required. In addition, the source testing frequency must revert to annual testing within 13 months of the previous testing date until three consecutive tests demonstrate compliance.

6. The #2 Hydrogen Plant Flare pilot fuel and header sweep gas shall be limited to natural gas.

7. The #2 Hydrogen Plant Flare flow rate shall be monitored continuously using a flow meter compensated for pressure and temperature. The flow meter shall be used to determine the standard cubic feet per minute (scfm) of gas flow to the flare.

8. The owner/operator shall maintain the following records for the #2 Hydrogen Plant. These records shall be maintained for a period of no less than five years from the time of generation and shall be readily available for review by Ecology and NWCAA.

    8.1. Hourly MMBtu HHV heat input rate to the SMR Furnace.

    8.2. 365-day rolling MMBtu HHV heat input rate to the SMR Furnace,

    8.3. The heat content in Btu/scf, hourly average of gas combusted in the #2 Hydrogen Plant Flare.

    8.4. The flow rate in scfm, hourly average, of gas combusted in the #2 Hydrogen Plant Flare.

For the #3 DHDS Unit

9. Fuel combusted in the #3 DHDS Charge Heater shall be limited to refinery fuel gas and natural gas.

10. Heat input to the #3 DHDS Charge Heater shall not exceed 28 MMBtu/hr HHV, based on a 365-day rolling average.

11. Particulate matter (PM_{10}, filterable and condensable) from the #3 DHDS Charge Heater shall not exceed any of the following emission limits:

    11.1. 0.28 lb/hr

    11.2. 0.010 lb/MMBtu

    11.3. Compliance with this condition shall be determined by the average of three test runs conducted during periodic source testing required under Condition 13.

12. BP shall demonstrate compliance with Condition 11.

    12.1. The furnace shall be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.

12.2. Determine compliance using 40 CFR 60 Appendix A Method 5 front half, and 40 CFR 51 Appendix M Method 202 for the back half, or an alternative test method if approved in advance by Ecology or NWCAA.

12.3. A typical mix of fuel shall be burned during the test period. This mix shall be listed in the test plan and report referenced in Condition 12.4.

12.4. BP will submit a test plan to Ecology or NWCAA for approval at least 30 days prior to performance testing.

13. BP shall demonstrate routine compliance with Condition 11.

13.1. Testing shall be conducted within 37 months of previous testing date using the methods and procedures described above.

14. The owner/operator shall maintain the following records for the #3 DHDS Unit. These records shall be maintained for a period of no less than five years from the time of generation and shall be readily available for review by Ecology and NWCAA.

14.1. Hourly MMBtu HHV heat input rate to the #3 DHDS Charge Heater.

14.2. 365-day rolling MMBtu HHV heat input rate to #3 DHDS Charge Heater.

Standard Requirements

15. Sampling ports and platforms shall be provided on the Steam Methane Reformer Furnace and #3 DHDS Charge Heater exhaust stacks, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate, permanent, and safe access to the test ports shall be provided.

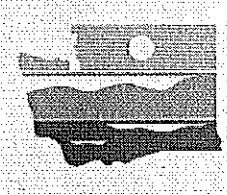
16. Within 90 days of start-up of the #2 Hydrogen Plant Steam Methane Reformer Furnace and the #3 DHDS Charge Heater, BP shall identify operational parameters and practices that will constitute "good combustion practices" for each unit. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA, or the EPA. If a failure to follow the requirements of the manuals results in excess emissions that failure may be considered credible evidence that the event was caused by poor or inadequate operation or maintenance.

17. Access to the source by Ecology, NWCAA, or the EPA shall be permitted upon request. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act and the Washington State Clean Air Act.

18. BP's requirements in the following approval conditions to notify or report to or acquire approval or agreement from "Ecology and the Northwest Clean Air Agency" may be satisfied by providing such notification, reporting, or approval request to NWCAA if the

approval conditions of this PSD permit have been incorporated in BP's Title V permit (40 CFR Part 70).

19. BP shall maintain records of all measurements from the continuous monitoring system, all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices. The records shall be retained for at least five years following the date of such measurements, maintenance, reports, and records generated. Any activity that is undertaken by the company or others, in a manner that is inconsistent with this determination shall be subject to department enforcement under applicable regulations. Nothing in this determination shall be construed to relieve the company of its obligations under any state, local, or federal laws or regulations.



DEPARTMENT OF
ECOLOGY
State of Washington

Technical Support Document for Prevention of Significant Deterioration Permit No. 10-01, Amendment 1

BP Cherry Point Refinery
Clean Fuels Project 2010
Blaine, Washington

January 2022

Publication and Contact Information

For more information contact:

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Technical Support Document for Prevention of Significant Deterioration No. 10-01, Amendment 1

BP Cherry Point Refinery
Clean Fuels Project 2010
Blaine, Washington

Air Quality Program

Washington Department of Ecology

Olympia, Washington

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1. Executive Summary

BP Products North America Inc. (BP) applied for an amendment of their Prevention of Significant Deterioration (PSD) permit to eliminate outdated requirements in the approval conditions. Ecology proposes to approve this amendment.

The BP Cherry Point Refinery is located at 4519 Grandview Road near the community of Birch Bay in Whatcom County. The refinery produces products including gasoline, diesel, jet fuel, green coke, calcined coke, liquefied petroleum gas (LPG), butane, pentane, and elemental sulfur.

This technical support document shows Ecology's analysis supporting our decision to approve this amendment.

2. Introduction

2.1. The permitting process

2.1.1. The PSD process

PSD permitting requirements in Washington State are established in Title 40, Code of Federal Regulations (CFR) §52.21; Washington Administrative Code (WAC) 173-400-700 through 750. Washington State implements its PSD program as a State Implementation Plan (SIP)-approved program. This SIP-approved program became effective May 29, 2015.

Federal and state rules require PSD review of all new or modified air pollution sources that meet certain criteria in an attainment or unclassifiable area with the National Ambient Air Quality Standard (NAAQS). The objective of the PSD program is to prevent significant adverse environmental impact from emissions into the atmosphere by a proposed new major source, or major modification to an existing major source. The program limits degradation of air quality to that which is not considered "significant." PSD rules require the utilization of Best Available Control Technology (BACT) for certain new or modified emission units, which is the most effective air pollution control equipment and procedures that are determined to be available after considering environmental, economic, and energy factors.

The PSD rules must be addressed when a company is adding a new emission unit or modifying an existing emission unit in attainment or unclassifiable area. PSD rules apply to pollutants for which the area is classified as attainment or unclassifiable with the NAAQS. PSD rules are designed to keep an area with "good" air in compliance with the NAAQS. The distinctive requirements of PSD are BACT, air quality analysis (allowable increments and comparison with the NAAQS), and analysis of impacts of the project on visibility, vegetation, and soils.

This change is not a major modification therefore the following is not triggered:

- BACT review – prior BACT review will be unchanged – October 28, 2010
- Impact analysis is not required – Prior impact analysis was evaluated on October 28, 2010.

2.1.2. The NOC process

This project is subject to NOC permitting requirements under state of Washington regulations Chapters 173-400 and 173-460 (and/or local air regulations where applicable). NWCAA is the permitting authority for air pollutants not included in PSD permitting. This includes the New Source Review (NSR) permitting of criteria pollutants that are not PSD-applicable, air toxics issues under federal maximum achievable control technology (MACT) and state 173-460 WAC, and Title V permitting requirements. The procedure for issuing an NOC permit was established in Chapter 70.94 RCW.

WAC 173-400-110 outlines the NSR procedures for permitting criteria pollutants. These procedures are further refined in WAC 173-400-113 (requirements for new sources located in

attainment or unclassifiable areas) and/or local air requirements where applicable. WAC 173-460-040 NSR supplements the requirements contained in Chapter 173-400 WAC (and/or local air requirements where applicable) by adding additional requirements for sources of toxic air pollutants (TAPs).

3. Site and Project Description

3.1. Site description

The BP Cherry Point Refinery is located in the City of Blaine in Whatcom County, Washington. BP is situated in Sections 7 and 8, Township 39N, Range 1E Willamette Meridian. The proposed project will not increase the current footprint acreage of the site.

The BP facility is located in a Class II area that is designated as "attainment or unclassifiable" for the purpose of PSD permitting for all pollutants.

3.2. Project description

BP owns and operates the BP Cherry Point Refinery. BP's request is as follows:

a. Remove Condition 15 since the notification requirement for commencement of construction and initial heater/furnace firing dates have already been met.

b. Remove Condition 19 since construction of the project was commenced with the period and has already been completed.

c. Remove Conditions 21 and 22 since the public review and comment period of the final permit determination has already elapsed.

d. Revise Condition 5.1 to state, "Testing shall be conducted within 13 months of the previous source testing date using the methods and procedures in Condition 4." This change allows for more flexibility in source test scheduling ahead of the prescribed 11-month minimum in the existing permit. It also aligns with similar changes being made to source test language in Order of Approval to Construct (OAC) permits with NWCAA.

e. Revise Condition 5.2 to state, "after three consecutive years of annual tests have demonstrated compliance, testing may be reduced to once every five years, and shall be conducted within 61 months of the previous source test date." This addition helps clarify when testing should occur similar to the revision above, aligns with similar changes being made to source test language in OAC permit with NWCAA.

f. Ecology issued PSD 10-01 on December 13, 2010, to approve the "Clean Fuels Project." The project was to install and operate new equipment to meet the new federal Ultra-Low Sulfur Diesel (ULSD) specifications for non-road equipment and benzene content for gasoline. Post project, the diesel fuel's sulfur content is limited to 15 part per million.

    1. The project removes up to 15 long tons of sulfur per day from refinery's non-road diesel fuel product. A new diesel hydro-desulfurization (#3 DHDS) processing unit to provide additional treatment to up to 25,000 barrels per day (9,125,000 BPY) of existing diesel fuel production. It has a 28 million BTU per hour (MMBtu/hr) charge heater.

g. A new hydrogen plant (#2 Hydrogen Plant) to produce up to 40 million standard cubic feet (MMSCFD) per day of synthesized hydrogen for the new #3 DHDS and other existing refinery operations. It will also purify up to four MMSCFD of hydrogen from existing refinery sources. A Steam Methane Reformer (SMR) furnace with a heat input capacity of 496 MMBtu/hr is the main source of combustion emissions. The new hydrogen plant also has a flare system to combust off specification gases associated with start-up, shutdown, and upset conditions. During normal operations, this flare will have limited use.

h. Ecology has added the information below to document current renewable capacity. No major or minor permitting was required per BP.

i. Renewable Diesel Optimization – From BP web page: https://www.bp.com/en_us/united-states/home/news/press-releases/bp-investing-almost-270-million-to-improve-efficiency-reduce-emissions-and-grow-renewable-diesel-production-at-cherry-point-refinery.html

j. The Renewable Diesel Optimization (RDO) project is a $45 million dollar investment that will more than double the refinery's renewable diesel production capability to an estimated 2.6 million barrels a year.

k. Renewable diesel is manufactured from biomass-based feedstocks, such as vegetable oils and rendered animal fats. The increased production capability from the RDO project is expected to reduce the CO_2 emissions resulting from the diesel produced by Cherry Point by approximately 400,000–600,000 tons per year.

l. In 2018, Cherry Point became the first and only refinery in the Pacific Northwest capable of processing these feedstocks alongside conventional feedstocks like crude oils. This fuel produced through co-processing is chemically identical to petroleum diesel and can be distributed using the same systems.

Ecology finds that the revision meets the description of administrative revision according to WAC 173-400-750 (3). Details of the revisions are described in Section 4 of this technical support document.

4. Changes to the PSD Permit

4.1. Permit Condition No. 15

Condition 15: The notification requirement for commencement of construction and initial heater/furnace firing dates were met in letters dated July 6, 2011, and April 11, 2013. The requirement will be removed.

4.2. Permit Condition No. 19

Condition 19: Notification of commencement of construction of the project was met in a letter dated April 18, 2013. The requirement will be removed.

4.3. Permit Conditions No. 21 and 22

Conditions 21 and 22 for the public review and comment period of the final permit determination was completed for the original permit. This action is administrative and no public review and comment period is required.

The following items were proposed changes by Ecology and confirmed by BP.

4.5. Finding No. 14

Added clarification that the PSD thresholds for $PM_{2.5}$ changed from filterable only to include condensable after the permit was complete.

4.6. Permit Condition No. 4

Ecology changed the initial compliance demonstration language to ongoing compliance.

4.7. Permit Condition No. 12

Ecology changed the initial compliance demonstration language to ongoing compliance.

5. Prior Determinations

The prior technical support document was issued on October 28, 2010.

1. The NSPS requirements of 40 CFR 60 Subparts A, J, Ja, GGGa, and QQQ are applicable to the Project. There are no applicable NSPS requirements for PM_{10} emissions.

2. BACT determinations are shown in Table 1.

Table 1: BACT Determinations for PM_{10}

Pollutant	Best Available Control	Emission Rate
#3 DHDS Charge Heater	Good Combustion Practices	0.28 lb/hr based on 0.0100 lb/MMBtu
#2 H_2 Plant SMR Furnace	Good Combustion Practices	4.96 lb/hr based on 0.0100 lb/MMBtu
#2 H_2 Plant Flare	Proper combustion, design to NSPS & MACT specifications	

3. Allowable increases in emissions from the Project will not cause or contribute to air pollution in violation of any NAAQS. Table 2 shows that PM_{10} impacts are below their respective NAAQS and SILs.

Table 2: Maximum Predicted Criteria Pollutant Concentrations ($\mu g/m^3$)

Pollutant	Avg. Period	Max. Concentration	Modeling SIL*	Monitoring De Minimis Concentration	Background	Total	Standard
PM_{10}	24-hr	0.8	5	10	---	---	150/NAAQS
PM_{10}	Annual	0.14	1	None	---	---	50 WAAQS
* SIL = Significant Impact Level, per the EPA New Source Review Manual, Draft 1990, Table C-4.							

4. Allowable increases in emissions from the Project will not cause or contribute to air pollution in violation of any PSD increment. Since PM_{10} did not break its SIL, no increment analysis is required.

5. Class I area distances and concentrations are shown in the Table 3.

Table 3: Predicted Class I Area Criteria Pollutant Concentrations

	Maximum Predicted Concentration (µg/m³)					
	NO_X[1]	PM_{10}	PM_{10}	SO_2	SO_2	SO_2
Class I Area of Interest	**Annual Avg.**	**24-hr Avg.**	**Annual Avg.**	**3-hr Avg.**	**24-hr Avg.**	**Annual Avg.**
Alpine Lakes Wilderness	1.45E-04	0.0115	0.0005	0.0109	0.0041	0.0001
Glacier Peak Wilderness	0.00085	0.0193	0.0010	0.0603	0.0143	0.0005
Goat Rocks Wilderness	1.62E-05	0.0037	0.0001	0.0032	0.0010	3.21e-05
Mount Adams Wilderness	9.15E-06	0.0030	0.0001	0.0019	0.0008	2.34e-05
Mount Baker Wilderness[2]	0.00324	0.0397	0.0024	0.1478	0.0358	0.0018
Mount Rainier National Park	3.44E-05	0.0070	0.0002	0.0045	0.0017	5.26e-05
N Cascades National Park	0.00177	0.0265	0.0019	0.0654	0.0178	0.0011
Olympic National Park	0.00198	0.0680	0.0021	0.0783	0.0221	0.0011
Pasayten Wilderness	0.00096	0.0174	0.0014	0.0268	0.0090	0.0006
Class I Area & Mt. Baker Maximum Concentration	0.00324	0.0680	0.0024	0.1478	0.0358	0.0018
EPA Proposed SIL[3]	0.1	0.3	0.2	1	0.2	0.1
FLM Recommended SIL[3]	0.03	0.27	0.08	0.48	0.07	0.03
Class I Area PSD Increment[4]	2.5	8	4	25	5	2

[1] NO_X was conservatively assumed to be 75 percent converted to NO_2, per Section 6.2.3 of EPA's Guideline on Air Quality Models (Appendix W to 40 CFR Part 51).

[2] Mount Baker Wilderness Area is not a Class I area. It is included in the analysis because FLMs have requested its inclusion in previous permit applications.

[3] SIL = Significant Impact Level; EPA proposed and FLM recommended from the Federal Register, Vol. 61, No. 142, p. 38292, July 23, 1996.

[4] PSD = Prevention of Significant Deterioration; from 40 CFR 52.21(c), adopted by reference in WAC 173-400-720(4)(a)(v).

6. Allowable emissions will not cause a significant visibility impact in:

   6.1. The surrounding Class I areas: The highest modeled impacts were 3.76 percent and 1.03 percent degradation in the Olympic National Park and North Cascades National Park, respectively. Federal land managers reviewed both the original and amended permit applications and considered the Project to be below their "concern" threshold.

   6.2. Nearby Class II wilderness and scenic areas: The highest modeled impact was 1.67 percent degradation in the Mt. Baker Wilderness Area. Federal land manager guidance considers this to be below the "concern" threshold.

7. The highest modeled deposition in the surrounding Class I areas is 0.0007 kilograms nitrogen and 0.0009 kilograms sulfur per hectare per year in the North Cascades National Park. The nitrogen deposition level is 14 percent of the "concern" threshold in federal land manager guidance. The sulfur deposition level is 18 percent of the federal land manager "concern" threshold.

8. No significant effect on industrial, commercial, or residential growth in the area is anticipated because of this project.

9. On September 1, 2010, EPA notified Ecology that the EPA has satisfied its obligations under Section 7 of the Endangered Species Act 16 U.S.C. § 1531 et seq., 50 C.F.R. part 402, subpart B (Consultation Procedures) and Section 305(b)(2) of the Magnuson-Stevens Fishery and Conservation Act 16 U.S.C. § 1801 et seq., 50 C.F.R. part 600, subpart K (EFH Coordination, Consultation, and Recommendations) relative to this Project.

10. In October of 2021, Ecology compared the Modelled PM_{10} impact to the $PM_{2.5}$ SILs and determined that the impacts were expectable. This is not required for this or the prior permit.

Table 4: 2021 $PM_{2.5}$ Impact Review

Pollutant	Avg. Period	Max. Concentration	Modeling SIL*	Monitoring De Minimis Concentration	Background	Total	Standard
PM_{10}	24-hr	0.8	5	10	---	---	150/NAAQS
PM_{10}	Annual	0.14	1	None	---	---	50/NAAQS
$PM_{2.5}$	24-hr	0.8	1.2	4	---	---	35/NAAQS
$PM_{2.5}$	Annual	0.14	0.2	---	---	---	12/NAAQS
* SIL = Significant Impact Level, per the EPA, October 20, 2010 – 75 FR 64864.							

Table 5: SMR Past Emissions

Year	Emissions Unit	Fuel E6FT3	PM	$PM_{2.5}$	SO_2	NO_X	VOC	CO	NH_3
2013	Hydrogen SMR Furnace Heater #2	2,196.1	8.0	2.0	---	6.0	---	1.0	2.0
2013	Hydrogen SMR Furnace Heater #2	---	---	---	---	2.0	---	---	---
2014	Hydrogen SMR Furnace Heater #2	2,831.9	8.0	3.0	---	8.0	---	---	5.0
2014	Hydrogen SMR Furnace Heater #2	---	---	---	---	2.0	---	---	---
2015	Hydrogen SMR Furnace Heater #2	2,831.9	2.3	2.1	2.0	17.0	0.2	0.1	3.3
2016	Hydrogen SMR Furnace Heater #2	1,072.2	2.0	2.0	---	9.0	---	1.0	4.0
2017	Hydrogen SMR Furnace Heater #2	983.0	1.0	1.0	---	7.0	1.0	---	3.0
2018	Hydrogen SMR Furnace Heater #2	33.7	0.1	0.1	0.1	6.0	0.3	0.8	---
2019	Hydrogen SMR Furnace Heater #2	7,939.8	4.3	4.3	0.1	6.1	0.1	0.0	---
Note: 2015 maintenance period with higher NOX emissions.									

Table 6: #3 Diesel Past Emissions

Year	Emissions Unit	Fuel E6FT3	PM	$PM_{2.5}$	SO_2	NO_X	VOC	CO
2013	DHDS Charge Heater #3	104.6	1.0	1.0	1.0	2.0	---	---
2014	DHDS Charge Heater #3	97.9	1.0	---	2.0	2.0	---	---
2015	DHDS Charge Heater #3	97.9	1.0	0.4	2.0	2.0	0.4	---
2016	DHDS Charge Heater #3	130.2	1.0	---	2.0	2.0	---	---
2017	DHDS Charge Heater #3	123.6	1.0	---	3.0	2.0	---	---
2018	DHDS Charge Heater #3	103.4	0.3	0.3	2.1	1.8	0.3	---
2019	DHDS Charge Heater #3	126.0	0.4	0.4	1.8	2.2	0.4	---

Table 7: Hydrogen Flare Past Emissions

Year	Emissions Unit	Fuel E6FT3	PM	$PM_{2.5}$	SO_2	NO_X	VOC	CO
2013	Hydrogen Flare #2	107.8	---	---	---	2.0	4.0	12.0
2013	Hydrogen Flare #2	381.5	1.0	1.0	---	4.0	12.0	32.0
2013	Hydrogen Flare #2	---	---	---	---	---	---	---
2014	Hydrogen Flare #2	69.0	---	---	---	1.0	3.0	7.0
2014	Hydrogen Flare #2	---	---	---	---	---	---	---
2014	Hydrogen Flare #2	6.0	---	---	---	---	---	1.0

Year	Emissions Unit	Fuel E6FT3	PM	$PM_{2.5}$	SO_2	NO_X	VOC	CO
2015	Hydrogen Flare #2	69.0	0.0	0.0	---	0.3	0.1	0.2
2015	Hydrogen Flare #2	---	1.2	1.2	0.1	3.1	26.0	14.2
2015	Hydrogen Flare #2	6.0	---	---	---	---	---	---
2016	Hydrogen Flare #2	5.1	---	---	---	---	7.0	---
2016	Hydrogen Flare #2	1.7	---	---	1.0	---	---	---
2016	Hydrogen Flare #2	1.5	---	---	---	---	---	---
2017	Hydrogen Flare #2	260.2	1.0	1.0	---	7.0	1.0	6.0
2017	Hydrogen Flare #2	83.7	---	---	---	7.0	1.0	6.0
2017	Hydrogen Flare #2	25.4	---	---	---	1.0	---	1.0
2018	Hydrogen Flare #2	141.9	0.5	0.5	0.0	3.8	0.4	3.2
2018	Hydrogen Flare #2	81.4	0.3	0.3	0.0	0.9	8.9	4.2
2018	Hydrogen Flare #2	---	---	---	---	---	---	---
2019	Hydrogen Flare #2	904.9	3.4	3.4	0.3	15.6	2.5	13.0
2019	Hydrogen Flare #2	16.6	0.1	0.1	0.0	0.2	0.5	0.7
2019	Hydrogen Flare #2	---	---	---	---	---	---	---

5. State Environmental Policy Act (SEPA)

Under Washington State rules, a final PSD permit shall not be issued for a project until the applicant has demonstrated that SEPA review has been completed for the project.

Northwest Clean Air Agency was the SEPA lead for this project and issued a Mitigated Determination of Nonsignificance (MDNS) SEP 2010-04893 on September 15, 2010.

Ecology concludes that the applicant has adequately demonstrated compliance with SEPA requirements. This permit revision is a non-project action and will incorporate SEP 2010-04893 by reference.

6. Environmental Justice (EJ) Review

EJ is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Ecology conducts an EJ review to ensure no group of people bear a disproportionate share of the negative environmental consequences as the result of the permitting action.

7. Public Involvement

This PSD permitting action meets the description of administrative revision according to WAC 173-400-750(3) and is not subject to a 30-day public comment period under WAC 173-400-740.

9. Agency Contact

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Acronyms and Abbreviations

BACT	Best Available Control Technology
CFR	Code of Federal Regulations
CO	carbon monoxide
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
hr/yr	hours per year
MACT	maximum achievable control technology
NAAQS	National Ambient Air Quality Standards
NOC	Notice of Construction
NO_X	nitrogen oxides
NSR	New Source Review
NWCAA	Northwest Clean Air Agency
PM	particulate matter
PM_{10}	particulate matter less than 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTE	potential to emit
SEPA	State Environmental Policy Act
SER	significant emission rate
SO_2	sulfur dioxide
TAP	toxic air pollutant
tpy	tons per year
VOC	volatile organic compound
WAC	Washington Administrative Code

DEPARTMENT OF ECOLOGY
State of Washington

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT

Issued To:	BP West Coast Products LLC BP Cherry Point Refinery
Facility Location:	4519 Grandview Road Blaine, Washington 98230
Permit Number:	**Final PSD 16-01**
Date of Permit Issuance:	**May 23, 2017**
Effective Date of Permit:	**May 23, 2017**

This PSD permit is issued under the authority of the Washington State Clean Air Act, Chapter 70.94 Revised Code of Washington; the Washington State Department of Ecology regulations for the Prevention of Significant Deterioration of Air Quality as set forth in Washington Administrative Code 173-400-700 through 750.

PREPARED BY:

GARY J. HUITSING STATE OF WASHINGTON 42376 REGISTERED PROFESSIONAL ENGINEER

Gary J. Huitsing, P.E.
Science and Engineering Section
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5/23/2017
Date

APPROVED BY:

Kathy Taylor, Ph.D.
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5/23/17
Date

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PROJECT SUMMARY

BP West Coast Products LLC operates a refinery in Blaine, Washington, referred to as the BP Cherry Point Refinery. The BP Cherry Point Refinery (BP or refinery) produces petroleum based fuels.

This Prevention of Significant Deterioration (PSD) project referred to as the BP Coker Heaters – Replacement project (or project), will make the following changes to the refinery:

- Replace the two existing coker heaters, installed as part of the original facility in 1970, with two new coker heaters equipped with spalling (online cleaning capability).
- Install a lean oil absorption system in the coker off gas system.
- Install a compressor as part of the new lean oil absorption system.
- Install bypasses of existing heat exchangers in crude preheat system.

Changes not triggering New Source Review include:

- Replace the boiler feedwater circulation pump for the coker heaters.
- Change the main fractionator accumulator for additional sour water generation associated with online spalling capability.

Construction on this project is expected to begin sometime in 2017, and the new units are expected to start operating during the third quarter of 2019.

A PSD analysis for this project determined that it will have physical or operational changes that qualify as a major modification. Estimated project emissions are above the PSD significant emission rate (SER) thresholds both before and after considering significant net emission increases and/or decreases associated with this project for each of the following pollutants: combined emissions of nitrogen oxide and nitrogen dioxide (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), sulfuric acid mist (H_2SO_4), particulate matter (PM), PM less than 10 microns (PM_{10}), PM less than 2.5 microns ($PM_{2.5}$), volatile organic compounds (VOCs), and greenhouse gases (CO_2e).

A full technical review of the project for these pollutants, including a Best Available Control Technology (BACT) analysis, and the project's effect on national ambient air quality standards (NAAQS), PSD increments, visibility, soils, and vegetation, is required and included in a Technical Support Document (TSD) prepared by the Washington State Department of Ecology (Ecology).

The emissions of other air pollutants not subjected to PSD review are covered in the Northwest Clean Air Agency's (NWCAA) Notice of Construction (NOC) approval for this project.

APPROVAL CONDITIONS

Based on the PSD permit application submitted by BP on March 28, 2016, and the technical review performed by Ecology, Ecology finds that all requirements for issuance of this PSD permit have been satisfied. Ecology determined the application complete on April 28, 2016. Approval of the project is granted subject to the following conditions:

I. EFFECTIVE DATE OF PERMIT

In accordance with the Washington Administrative Code (WAC) 173-400-730(2)(c), the effective date of this PSD permit is one of the following dates:

A. The date of issuance of this permit; or

B. A later date if specified on the signature page of this permit.

II. PERMIT EXPIRATION

Pursuant to WAC 173-400-730(5), and unless an extension is granted by Ecology prior to expiration, BP's authorization to construct under this PSD permit expires as follows:

A. This permit expires, and re-permitting will be required before any further construction activity may occur, if:

1. Construction of has not commenced (as defined in 40 CFR § 52.2l (b)(9)) within eighteen (18) months of the effective date of this permit; or

2. Construction is discontinued for a period of eighteen (18) months or more; or

3. Construction is not completed within a reasonable time.

III. PERMIT NOTIFICATION REQUIREMENTS

A. BP's requirements in this PSD permit to notify, report to, or acquire approval or agreement from "Ecology and/or the NWCAA" may be satisfied by providing such notification, reporting, or approval request to NWCAA if the conditions of this PSD permit have been incorporated into BP's Title V Air Operating Permit issued pursuant to 40 CFR Part 70 and Chapter 173-401 WAC.

B. BP must notify Ecology and NWCAA in writing or electronic mail of the date construction of the project is commenced, postmarked or received no later than thirty (30) days after such date.

C. By March 1 of each year, BP must submit to Ecology, in writing or electronic mail, an annual report containing a brief summary of the construction activities

related to the project that occurred during the previous calendar year. This reporting obligation shall end when BP submits a notification to Ecology, in writing or electronic mail, that all construction activities related to the project have been completed. This notification of completion shall contain a brief summary of any construction activities related to the project that have not been included in a prior annual report.

IV. EQUIPMENT RESTRICTIONS

This PSD permit authorizes the construction of the new equipment associated with the coker heater replacement project, as listed in Table IV-1. However, BP may choose not to construct all of the listed equipment.

Table IV-1. New Equipment Associated with the Coker Heater Replacement Project

Equipment Description	New or Modified
Coker Heater (West)	New
Coker Heater (East)	New
Lean Oil Absorption System	New
Compressor for lean oil absorption system	New
Crude Heat Exchanger Bypasses	New

V. EMISSION LIMITS

The following emission limits apply to each coker heater unless otherwise specified. These limits include consideration of BACT determinations described in Section VI. The operating modes described in these limits are defined as:

- Forced draft mode is when the forced draft fan is operating.
- Natural draft mode is when the forced draft fan is not operating.
- Normal operations mode is when hot residual oil at normal coking temperatures (900°F or higher) is sent to the coking drum to produce coke. Online cleaning is part of the normal operations mode.
- Standby mode occurs when circulating process materials to maintain unit temperatures when not producing coke from the heater.
- Startup mode is the period between when fuel gas is introduced to the heater burners to heat process materials for coking and ends when process material leaving the heater reaches normal coking temperatures (900°F).
- Pre-startup activities include equipment preparation and verification activities following maintenance events (e.g., curing refractory, general mechanical

checkout of equipment, instrument system review, pressure testing, and purging equipment).

- Shutdown mode starts when fuel gas to the heater burners is stopped and ends when heater stack oxygen level reaches 18 percent, or greater, as measured by the Continuous Emission Monitoring System (CEMS).

A. NO_X:

1. NO_X emissions resulting from each coker heater unit must not exceed the following limits:

   a. Concentration based limits for normal operation in forced draft mode based on a 30-day rolling average (includes startup/shutdown emissions): 6.0x10^1 parts per million volume dry (ppmvd) at zero percent oxygen.

   b. Mass emission rate limit for normal operation in forced draft mode: 18.2 lb/hr on a calendar day average (includes startup/shutdown emissions).

   c. Concentration based limits for normal operation in natural draft mode based on a 30-day rolling average (includes startup/shutdown emissions): 4.0x10^1 ppmvd at 0 percent oxygen. This limit shall apply at and after 30 consecutive days of heater operation in natural draft mode. For periods of continuous normal heater operation in natural draft mode less than 30 days in duration, the limit in Condition V.A.1.a must apply.

   d. Mass emission rate limit for normal operation in natural draft mode: 12.1 lb/hr on a calendar day average (includes startup/shutdown emissions).

   e. Mass emission rate limit for standby mode: 8.0 lb/hr per heater on a rolling 24-hour average.

B. CO:

1. CO emissions resulting from each coker heater unit must not exceed the following limits:

   a. Concentration based limits for normal operation in forced and natural draft mode (excluding standby, startup, and shutdown): 33 ppmvd at zero percent oxygen on a 30-day rolling average.

   b. Mass emission rate limit for normal operation in forced and natural draft mode: 6.1 lb/hr based on a calendar day average.

c. Mass emission rate limit for startup/shutdown modes: 75.0 lb/hr hourly average.

d. Mass emission rate limit for standby mode: 75.0 lb/hr on a rolling 24-hour average.

C. SO_2:

1. SO_2 emissions resulting from both coker heater units must not exceed the following limits.

a. Mass emission rate limit of 37 lb/hr on a calendar day average (includes startup/shutdown emissions) for both heaters combined.

b. Mass emission rate limit of 132 tons per year for both heaters combined, on a 12-month rolling total.

D. Particulate Matter (Filterable)

1. PM (filterable) from each coker heater unit must not exceed the following limit:

a. Concentration based limit of 0.0025 lb/MMBtu on an hourly average or as needed, consistent with test method.

E. PM_{10} and $PM_{2.5}$ (Filterable and condensable combined)

1. PM_{10} and $PM_{2.5}$ (including filterable and condensable combined particulate) from each new coker heater unit must not exceed the following limit:

a. Concentration based limit of 0.010 lb/MMBtu on an hourly average or as needed, consistent with test method.

F. VOC

1. VOCs from each coker heater unit must not exceed the following limit:

a. Concentration limit of 0.0054 lb/MMBtu on an hourly average or as needed, consistent with test method.

G. H_2SO_4

1. H_2SO_4 from each coker heater unit must not exceed the following limits:

a. Concentration based limit of 0.0053 lb/MMBtu on an hourly average or as needed, consistent with test method.

H. CO_2e

1. CO_2e from each new coker heater unit must not exceed the following limits:

a. Mass emission rate limit of 36,631 lb/hr on a calendar year average.

VI. BACT DETERMINATIONS

Consistent with 40 CFR § 52.21(j)(3), which requires that BACT be applied to each PSD pollutant with significant net emissions increases, the BACT determinations of this section apply to this project. Facility units not listed in this section, do not require a BACT analysis because they are not physically or operationally modified as a result of this project.

A. BACT for Coker Heaters:

Table VI-1. BACT Determinations for Coker Heaters

Pollutant	BACT Determination Description
NO_X	Ultra low NO_X Burners (ULNB) and Good Combustion Practices. These BACT determinations shall be demonstrated by compliance with the NOx BACT limits of Section V.
CO	Good Combustion Practices, demonstrated by compliance with CO BACT limits of Section V.
SO_2	Good Combustion Practices, use of coker off gas, and fuel limits for hydrogen sulfide (H_2S). These BACT determinations shall be, demonstrated by compliance with the SO_2 BACT limits of Section V.
PM (filterable)	Good Combustion Practices and use of low sulfur fuels (see SO_2 BACT determination). These BACT determinations shall be, demonstrated by compliance with the PM BACT limits of Section V.
PM_{10} (filterable and condensable)	Good Combustion Practices and use of low sulfur fuels (see SO_2 BACT determination). These BACT determinations shall be demonstrated by compliance with the PM_{10} BACT limits of Section V.
$PM_{2.5}$ (filterable and condensable)	Good Combustion Practices and use of low sulfur fuels (see SO_2 BACT determination). These BACT determinations shall be, demonstrated by compliance with the $PM_{2.5}$ BACT limits of Section V.
VOC	Good Combustion Practices demonstrated by compliance with the VOC BACT limits of Section V.
H_2SO_4	Good Combustion Practices, use of coker off gas, and fuel limits for hydrogen sulfide (H_2S). These BACT determinations shall be demonstrated by compliance with the H_2SO_4 BACT limits of Section V.
CO_2e	Good Combustion Practices, use of low-carbon fuels such as coker off gas and/or refinery fuel gas (RFG), and energy efficient design. These BACT determinations shall be, demonstrated by compliance with the CO_2e BACT limits of Section V.

B. BACT for Components of Coker Heaters, Lean Oil Absorption, and Heat Exchangers:

Table VI-2. BACT Determinations for Components of Coker Heaters, Lean Oil Absorption, Cooling Box, and Heat Exchangers	
Pollutant	**BACT Determination Description**
VOC	Implementation of Leak Detection and Repair (LDAR) program consistent with 40 CFR 60 Subpart GGGa and Subpart VVa (including recordkeeping requirements contained within each regulation).
CO_2e	Implementation of Leak Detection and Repair (LDAR) program consistent with 40 CFR 60 Subpart GGGa and Subpart VVa (including recordkeeping requirements contained within each regulation).

VII. SPECIFIC OPERATING REQUIREMENTS

The following requirements are listed as statements of fact because they are relevant to this permit. Ecology is not making them enforceable as part of this permit because they are already enforceable independent of this permit.

A. The coker heaters must comply with all applicable requirements of New Source Performance Standards (NSPS), 40 CFR Part 60.1-60.19 (Subpart A).

B. The coker heaters must comply with all applicable NSPS requirements of 40 CFR Part 60.100a-60.109a (Subpart Ja), including but not limited to the emission limits in Table VI-1.

C. The lean oil absorption system must comply with all applicable NSPS requirements of 40 CFR Part 60.1-60.19 (Subpart A).

D. The lean oil absorption system must comply with all applicable NSPS requirements of 40 CFR Part 60.660-668 (Subpart NNN).

E. New components of this project in organic HAP service, must comply with all applicable requirements of National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, (Subpart CC).

F. The coker unit must comply with all applicable updated NESHAP requirements of 40 CFR Part 63, (Subparts CC and UUU).

G. The coker heaters must comply with all applicable NESHAP requirements of 40 CFR Part 63, (Subpart DDDDD).

VIII. COMPLIANCE MONITORING REQUIREMENTS

BP must complete the required compliance test and certification for the following continuous emission monitoring system (CEMS) within 60 days of achieving the maximum firing rate at the coker heaters, but not later than 180 days after initial start-up. All testing (both initial and follow-up) must be conducted while heaters are fired at least 90 percent of the normal maximum operating rate (MMBtu/hr). Normal maximum operating rate is defined as the 90th percentile of the average hourly operating rates during the previous 12-month period. Retesting would be required within 60 days if the heater firing rate, based on a six (6) month average, is above 110 percent of the average firing measured during the most recent source test.

A. BP must demonstrate compliance for NO_X in Conditions V.A.1. with a CEMS that monitors NO_X and O_2 operated in accordance with 40 CFR 60 Appendix B and F, and NWCAA 367 and Appendix A. Stack flows for calculating NOx mass emissions must be determined in accordance with Condition VIII.H.

B. BP must demonstrate compliance for CO in Conditions V.B.1 with a CEMS that monitors CO and O2operated in accordance with 40 CFR 60 Appendix B and F, and NWCAA 367 and Appendix A. Stack flows for calculating NOx mass emissions must be determined in accordance with Condition VIII.H

C. BP must demonstrate compliance for SO_2 in Conditions V.C1. with a CEMS that monitors SO_2 and O_2, operated in accordance with 40 CFR 60 Appendix B and F, and NWCAA 367 and Appendix A. Stack flows for calculating SO_2 mass emissions must be determined in accordance with Condition VIII.H

D. BP must demonstrate compliance for particulate matter in Conditions V.D.1 and V.E.1 as stated in subsection i below:

   i. BP must conduct source testing using EPA Method 5 or 201A (for filterable particulate matter) and Method 202 (for condensable particulate), or other method pre-approved by the NWCAA. BP must conduct an initial stack test no more than 180 days after startup. Thereafter, conduct testing within 13 months of the most recent test. After three consecutive tests on each cooker heater that have demonstrated emissions are less than emissions limits in Condition V.D.1 and V.E.1, testing of each coker heater may be reduced to once every five years for that pollutant. If a test demonstrates emissions are greater than the emission limits in Conditions V.D.A and V.E.1, annual testing for that pollutant is required until three consecutive tests demonstrate compliance.

E. BP must demonstrate compliance for VOC in Conditions V.F.1 as stated in subsection i below:

i. BP must conduct source testing using EPA Method 25A, or other method pre-approved by the NWCAA, in coordination with NWCAA. BP must conduct an initial source test no more than 180 days after startup. Thereafter, demonstrate compliance within 20 calendar quarters of the most recent test.

F. BP must demonstrate compliance for H_2SO_4 in Conditions V.G.1. as stated in subsection i below:

i. BP must conduct source stack testing using EPA Method 8, or other method pre-approved by the NWCAA, in coordination with NWCAA. BP must conduct an initial source test no more than 180 days after startup. Thereafter, demonstrate compliance by conducting testing using EPA Method 8, or other method preapproved by the NWCAA, within 20 calendar quarters of the most recent test.

G. BP must demonstrate compliance for CO_2e in Conditions V.H.1., with fuel tracking and 40 CFR Part 98 (Subpart C).

H. Coker off gas combusted in the coker heaters must be sampled and analyzed on a weekly basis for composition using Universal Oil Products (UOP) Laboratory Test Method 539-97 "Gas Analysis by Gas Chromatography" or equivalent. The gas composition must be used to determine the heat content of the gas in terms of British thermal unit, high heat value, per standard cubic foot (Btu/scf) and to determine the EPA Method 19 Fd factor for the gas. An alternative method to EPA Method 19 can be used to determine the Fd factor if pre-approved by NWCAA.

IX. RECORDKEEPING AND REPORTING REQUIREMENTS

A. Beginning the first calendar month after source testing and CEMS certification have been reported to NWCAA and Ecology, BP must keep the following records at the site (or electronically accessible at the site):

1. The calculations and results pursuant to Condition VIII (A through H).

2. The data used to determine compliance with the Condition V (A through C) with the appropriate averaging time of the emission limit.

B. Records must be retained for not less than five (5) years after their origination.

1. At a minimum, the most recent two (2) years of data must be retained onsite (or be electronically accessible at the site). The remaining three (3) years of data may be retained off-site.

2. Records must be available for inspection by Ecology and NWCAA within ten (10) days of request.

C. By April 15 of each year, beginning with the year following the startup of the two new coker heaters authorized by this permit, BP must report in writing or electronic mail, postmarked or received by April 15 of each year, the following information to Ecology and/or NWCAA. This report can be integrated with the state annual emissions inventory report.

1. Annual Emission and emission rates of the pollutants in Condition V

D. BP must furnish Ecology and/or NWCAA, within 60 days of completion, a report of the results of any performance evaluation in Conditions VIII.A-G.

X. GENERAL RESTRICTIONS ON FACILITY OPERATIONS

A. At all times, BP must, to the extent practicable, maintain and operate the equipment listed in Table IV-1 of this permit, including any associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

B. Determination of whether acceptable operating and maintenance procedures are being used for the equipment listed in Table IV-1 of this permit will be based on information available to Ecology, NWCAA, EPA and/or their authorized representatives, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

XI. MALFUNCTION AND EXCESS EMISSIONS REPORTING

A. Prior to incorporation of the conditions of this PSD permit into BP's Title V Air Operating Permit issued pursuant to 40 CFR Part 70 and WAC 173-401, BP must report to Ecology and NWCAA, in writing or electronic mail, following the discovery of any malfunction of air pollution control equipment, process equipment, or of a process, which results in an increase in emissions above the allowable emission limits of this permit, in accordance with WAC 173-400-107 and the following conditions:

1. BP must notify Ecology and NWCAA, in writing or electronic mail, postmarked or received no later than thirty (30) days after the end of the month in which a malfunction is discovered, for any malfunction of air pollution control equipment, process equipment, or of a process, which results in an increase in emissions above the allowable emission limits of this permit. This notification must include a description of the malfunctioning equipment, process equipment or process, the date and time of the initial malfunction (if

known), the period of time over which emissions were increased due to the malfunction, the cause of the malfunction (if known), the estimated resultant excess emissions, and the methods utilized to mitigate emissions and restore normal operations.

2. For purposes of this permit, "malfunction" means any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner.

B. After the conditions of this PSD permit have been incorporated into BP's Title V Air Operating Permit issued pursuant to 40 CFR Part 70 and WAC 173-401, BP shall report to NWCAA the discovery of any malfunction of air pollution control equipment, process equipment, or of a process, which results in an increase in emissions above the allowable emission limits specified in this permit, pursuant to the deviation reporting requirements and, if applicable, pursuant to the unavoidable excess emissions reporting requirements of that Title V Air Operating Permit.

C. Compliance with the malfunction notification requirements, as applicable, will not excuse or otherwise constitute a defense to any violation of this PSD permit or any law or regulation such malfunction may cause.

XII. RIGHT OF ENTRY

Section 114 of the federal Clean Air Act, 42 U.S.C. § 7414, and the Revised Code of Washington (RCW) 70.94.200, and WAC 173-400-105(3) provide authorized representatives of EPA, Ecology, and NWCAA certain rights to enter and inspect the source. Refusal by BP to allow such entry and inspection may be a violation of the federal Clean Air Act and/or the RCW subject to penalty as provided in those statutes. Pursuant to these statutes, authorized representatives of EPA, Ecology, and NWCAA, upon the presentation of credentials:

A. Have a right of entry to, upon, or through any premises of BP or any premises in which any records this permit requires BP to maintain are located.

B. Have the right, at reasonable times, to access and copy any records this permit requires BP to maintain.

C. Have the right, at reasonable times, to inspect any monitoring equipment or method required by this permit.

D. Have the right, at reasonable times, to sample any emissions that BP is required to sample under this permit.

XIII. TRANSFER OF OWNERSHIP

A. In the event of any changes in control or ownership of facilities to be constructed, this PSD permit will be binding on all subsequent owners and operators. The applicant must notify the succeeding owner and operator of the existence of this PSD permit and its conditions by letter, a copy of which must be forwarded to Ecology and/or NWCAA as specified in Condition III.A.

B. If the conditions of this PSD permit have been incorporated into BP's Title V Air Operating Permit issued pursuant to 40 CFR Part 70 and WAC 173-401, then the provisions for amending that Title V Air Operating Permit to allow for a change in ownership or operational control shall apply in place of the notification provisions in Condition XIII.A.

XIV. ADHERENCE TO APPLICATION AND COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

A. Pursuant to 40 CFR § 52.21(r) (1) as adopted in WAC 173-400-720(4)(vi), BP must install and operate the proposed emissions units in accordance with this PSD permit and the application on which this permit is based.

B. Pursuant to 40 CFR § 52.21(r)(3), as adopted in WAC 173-400-720(4)(vi) this PSD permit shall not relieve BP of the responsibility to comply fully with applicable provisions of the State Implementation Plan and any other requirements under local, state, or federal law.

C. Any applicant who fails to submit any relevant facts or who has submitted materially incorrect relevant information in a permit application must, upon becoming aware of such failure, or incorrect submittal, promptly submit such supplementary facts or corrected information.

D. To the extent provided by 40 CFR § 52.21(c), as adopted in WAC 173-400-720(4)(vi) for the purpose of establishing whether or not BP has violated or is in violation of any requirement of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether BP would have been in compliance with applicable requirements if the appropriate performance or reference test or procedure had been performed.

XV. APPEAL PROCEDURES

This PSD permit, or any conditions contained in it, may be appealed to:

A. The Pollution Control Hearings Board (PCHB) as provided in Chapter 43.21B RCW and Chapter 371-08 WAC.

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
CFR	Code of Federal Regulations
CEMS	Continuous Emissions Monitoring System
CO	carbon monoxide
CO_2e	carbon dioxide equivalents
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
FTIR	Fourier Transform Infrared (FT-IR) spectrometer
GC	Gas Chromatography
gal	gallon(s)
GHG	greenhouse gases
H_2SO_4	sulfuric acid mist
HVLP	High Volume Low Pressure
kW	kilowatt
lb	pound(s)
lb/hr	pound(s) per hour
mm Hg	millimeters of mercury column
MMBtu/hr	million British thermal units per hour
MSDS	Material Safety Data Sheet
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_X	nitrogen oxides
NWCAA	Northwest Clean Air Agency
O_2	oxygen
PCHB	Pollution Control Hearings Board
PM	particulate matter
PM_{10}	particulate matter less than 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter

ppm	parts per million
ppmv	parts per million by volume
ppmvd	parts per million by volume on a dry basis
PSD	Prevention of Significant Deterioration of Air Quality
RCW	Revised Code of Washington
scf	standard cubic feet
SCR	selective catalytic reduction
SO_2	sulfur dioxide
tpy	tons per year
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
WAC	Washington Administrative Code

3rd Hearth
Coke Calciner

CHRISTINE O. GREGOIRE
Director

RECEIVED
FEB 3 1989
F. FORMWAY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

COPY

January 31, 1989

Fielding Formway, Manager
ARCO Petroleum Products Company
Box 1127
Ferndale, WA 98248

Dear Mr. Formway:

Enclosed are copies of the "Technical Analysis for Modification of the Prevention of Significant Deterioration Approval for ARCO Petroleum Products Company's Third Hearth" and "Final Approval of PSD Application". The modified permit allows ARCO to emit a greater amount of nitrogen oxides and replaces the existing Approval.

This approval is issued under the provisions of RCW 70.94.332 and 40 CFR part 52. Any person feeling aggrieved by this approval may obtain review thereof by application, within 30 days of receipt of this approval, to the Pollution Control Hearings Board, Mail Stop PY-21, Olympia, WA 98504-8921, with a copy to the Director, Department of Ecology, Mail Stop PV-11, Olympia, WA 98504-8711 pursuant to the provisions of Chapter 43.21B RCW and the rules and regulations adopted there under.

Also, within 30 days of this approval, any person who commented on the draft approval may petition the EPA Administrator, under 40CFR 124.19, to review any condition of the decision. Any person who failed to file comments or failed to participate in the public hearing on the draft may petition for administrative review only to the extent of the changes form the draft to the final approval decision. The petition for review must contain the information listed in 40CFR 124.19.

Thank you for your cooperation on this matter. If you have any questions please call me at (206) 867-7117.

Sincerely,

Jay M. Willenberg, P.E.
Engineering and Planning
Air Program

j13arco2

WASHINGTON DEPARTMENT OF ECOLOGY
MAIL STOP PV-11
OLYMPIA, WASHINGTON 98504

IN THE MATTER OF: ARCO Petroleum Products Co. P.O. Box 1127 Ferndale, Washington 98248	NO. PSD-89-2 FINAL APPROVAL OF PSD APPLICATION

Pursuant to Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations, Part 52 and State of Washington regulations WAC 173-403-080 and based upon the complete application submitted by ARCO Petroleum Products Company, and the technical analysis performed by the Department of Ecology (the department), dated January 4, 1988, the department now finds the following:

FINDINGS

1. ARCO operates a petroleum refinery at Ferndale, Washington.

2. ARCO has obtained PSD approval to operate a third calciner, as part of that approval nitrogen oxides emissions are limited to 373 tons per year. ARCO has requested changing the nitrogen oxides limit to 509 tons per year.

3. The proposal would increase the permitted nitrogen oxides emissions by 136 tons per year. An increase of permitted emissions of 136 tons per year is a significant increase in emissions and the proposal constitutes a major modification according to 40CFR51.18(27).

4. The modification is located in an area that has been designated Class II for purpose of PSD evaluation, and is located approximately 80 km from the nearest Class I area.

5. The plant is located in an area that is in attainment as regards to all National Ambient Air Quality Standards and all state air quality standards.

6. Nitrogen oxides emissions are controlled by combustion temperature and staged air combustion. This type of treatment will result in emissions of 0.27 x 10-6 pounds per dry standard cubic foot, and constitutes Best Available Control Technology (BACT).

7. The ambient impact for the proposal was determined with the use of the EPA Industrial Source Complex Model and with the EPA Complex I Model.

8. The modeling results indicate that the National Ambient Air Quality Standard for nitrogen oxides would not be threatened

9. A screening calculation per "Workbook for Estimating Visibility Impairment" EPA 450/4-8-031, shows that the project will not impair visibility in the nearest Class I area.

10. The project will not result in significant deposition of acid rain in any sensitive environment, nor result in degradation of any other air quality-related value.

APPROVAL CONDITIONS

1. These approval conditions supersedes those granted by the Department of Ecology on December 20, 1984.

2. The emissions from the Number 3 Coke Calciner shall not exceed any of the following limitations:

a. 160 parts per million of sulfur dioxide, corrected to 7 percent oxygen, dry basis, based on a calendar day average; or,

b. 0.01 grains particulate per dry stand cubic foot corrected to 7 percent oxygen for any sixty consecutive minutes; or ,

c. 504 tons of sulfur dioxide per year; or,

d. 26 tons of particulate per year; or,

e. 509 tons of nitrogen oxides per year; or,

f. That quantity of sulfur dioxide that remains after removal of ninety percent of the sulfur dioxide that enters the scrubber; or,

g. 20 percent opacity, per EPA Method 9.

3. Emissions of particulate matter from the new silo, the railcar load out and the new hearth transfer tower shall not exceed 0.01 grains per dry standard cubic foot, 21 tons per year and shall not exceed 20 percent opacity , per EPA Method 9

4. Within 180 days of final approval of this application ARCO shall install, calibrate, maintain and operate a system for continuously monitoring sulfur dioxide, nitrogen oxide, and oxygen. The monitoring system shall be used in determining compliance with the nitrogen oxides emission limit listed above. The monitoring system shall conform with the requirements of Performance Specification 2 and 3 of 40CFR60 Appendix B, except that the NOx span drift in Performance Specification 2 may not exceed 5.0% of full scale. In addition, within 90 days after final approval ARCO shall develop a quality assurance program acceptable to the department which the department may require to be periodically updated.

4. This approval shall become void if construction of the project is not commenced within eighteen (18) months after receipt of final approval, or if construction or operation of the facility is discontinued for a period of eighteen (18) months.

5. Any activity which is undertaken by the company or others, in a manner which is inconsistent with the application and this determination, shall be subject to department enforcement under applicable regulations. Nothing in this determination shall be construed to relieve the company of its obligations under any state, local, or federal laws or regulations.

6. Access to the source by the Environmental Protection Agency (EPA), state or local regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow such access is grounds for revocation of this determination of approval.

Date 1/30/88

Stuart Clark
Air Program

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

April 12, 2022

Mr. Eric R. Zimpfer
Vice President of Refining – Cherry Point
4519 Grandview Rd,
Blaine, WA 98230

Re: Permit No. PSD 95-01 Amendment 2 – Permit Amendment

Dear Mr. Zimpfer:

The Washington State Department of Ecology's Air Quality Program (Ecology) is pleased to present you with the enclosed final Prevention of Significant Deterioration (PSD) permit Number PSD No.95-01 Amendment 2 for BP Cherry Point Refinery. I have also enclosed a copy of the permit's Technical Support Document that describes the changes.

If you have questions, please contact MengChiu Lim at (360) 407-6812 or mengchiu.lim@ecy.wa.gov.

Sincerely,

Robert Dengel
Deputy Program Manager, Air Quality Program

Enclosures

cc: Sahil Patel, BP Products North America Inc.
Chris Hanlon-Meyer, Ecology
Robyn Jones, Northwest Clean Air Agency (NWCAA)
EPA Region 10
James Miller, USFS
Kirsten King, NPS
Don Shepherd, NPS

DEPARTMENT OF ECOLOGY
State of Washington

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT

Issued To:	BP Cherry Point Refinery
Facility Location:	4519 Grandview Road Blaine, Washington 98230
Permit Number:	**PSD No. 95-01, Amendment 2**
Date of Permit Issuance:	**April 12, 2022**
Effective Date of Permit:	**April 12, 2022**

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code 173-400-700. Based upon the application and fees submitted by the BP Cherry Point Refinery (BP) with the fees received on September 13, 2021, the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

PREPARED BY:

MENGCHIU LIM STATE OF WASHINGTON 50167 REGISTERED PROFESSIONAL ENGINEER

4/12/2022

MengChiu Lim, P.E.
Science and Engineering Section
Air Quality Program

Date

APPROVED BY:

4/12/2022

Robert Dengel
Deputy Air Quality Program Manager
Washington Department of Ecology

Date

Project Description

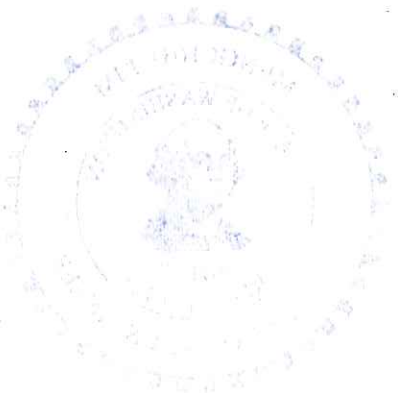
BP owns and operates the BP Cherry Point Refinery, which is located in the City of Blaine in Whatcom County, Washington.

BP applied for an amendment of their PSD permit to:

- Correct a typographical error.
- Express the concentration limit in dry standard condition.
- Change the testing frequency for sulfuric acid mist emission.

This PSD No. 95-01, Amendment 2 revises the PSD No. 95-01, Amendment 1 issued January 20, 2009. The original PSD No. 95-01 was issued March 15, 1995, for the emission unit described below.

- Calciner Hearth 3



Approval Conditions

1. Emissions of sulfuric acid mist (H_2SO_4) shall not exceed any of the following emission limits:
   a. 18.3 pounds per hour (lb/hr), 60-minute rolling average, and
   b. 50 milligram per dry standard cubic meter (mg/dscm) at seven percent oxygen, 60-minute rolling average.

2. Compliance with Approval Condition 1 will be measured by monitoring the performance of the Wet Electrostatic Precipitator (WESP) plus source testing as required by Approval Condition 3. BP shall follow the requirements of the monitoring plan approved by Ecology on May 2, 2007, or as amended. The monitoring plan may be amended by advance written approval from Ecology.

3. BP shall determine compliance with the H_2SO_4 emissions limits using EPA Method 8, EPA Conditional Test Method 013, or an alternate test method if approved in writing, in advance by Ecology or NWCAA. BP shall perform source testing for Calciner Hearth 3 within 25 months of the previous source test date.

   BP shall submit a source test plan to NWCAA for approval prior to testing. The source test plan shall include operating ranges for the WESP, and will define operating conditions for testing the stack for compliance. The source test plan shall also include testing the stack for compliance while the WESP is operating in the most limiting condition in the WESP monitoring plan.

4. Any activity, which is undertaken by the company or others, in a manner, which is inconsistent with the application and this determination, shall be subject to enforcement under the applicable regulations.

5. Access to the source by the Environmental Protection Agency, state or local regulatory personnel shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for revocation of this determination of approval.

6. This permit supersedes PSD No. 95-01, Amendment 1.