

**BART Order
SUPPORT DOCUMENT ADDENDUM FOR
INCORPORATING A BART ALTERNATIVE IN
REVISION 2 TO BART ORDER #7836
ISSUED TO THE BP CHERRY POINT REFINERY
BLAINE, WASHINGTON**

Prepared by

**Washington State Department of Ecology
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Summary of Proposal

The BP Cherry Point Refinery (BP) has requested a revision to the BART Order to incorporate a BART Alternative measure. The measure reflects the actual nitrogen oxides (NO_x) capability of the Hydrocracker 1st Stage Reactor Heater (R-1 Heater) and the future replacement of BART units with new units.

BP has proposed to have their federally approved BART Order modified to incorporate a Bart Alternative measure that when implemented will reduce emissions and lead to greater progress to meeting the Regional Haze visibility goal than the original BART requirements.

The alternative reflects a higher heat input rate for the R-1 Heater resulting from its debottlenecking by the recently completed "Clean Fuels Project." To offset the higher potential emissions from the R-1 Heater, the emission limitations on the Hydrocracker 1st Stage Fractionator Reboiler (R-1 Reboiler) will be reduced to reflect actual operating capabilities. The R-1 Reboiler is also an emission unit subject to BART control requirements. The higher heat rate is used when calculating the maximum lb NO_x/hr emission limit on the R-1 heater. The potential emission increase from this change is offset by reducing the maximum emissions allowed for the R-1 Reboiler. The R-1 Reboiler emissions decrease is based on the ultra-low NO_x (ULN) burners that have been installed on the R-1 Reboiler as part of the Clean Fuels Project.

The company is also requesting that there be language added to their Order which:

- Clarify what emissions limitations apply when a BART emission unit is replaced with a new unit, and
- To include a provision included in other Washington State Department of Ecology (Ecology) BART Orders allowing monitoring, recordkeeping, and reporting requirements to be modified by a separate Ecology-issued regulatory order.

The Revision Request

BP has requested Ecology to revise BART Order #7836 Revision 1 as follows.

1. BP has requested that BART Emission Limitations 2.5.1.2 and 2.6.1 of the BART Order be modified to reflect the effects of the installation of ULN burners on two process heaters and debottlenecking of the hydrocracker unit by the Clean Fuels Project. The request is to provide a better than BART reduction in emissions by the company revising the BART limits for one of the heaters on the hydrocracker downward.
2. To reduce the need for amending the Washington Regional Haze State Implementation Plan (RH-SIP) to remove decommissioned equipment from the BART Order, the company has also requested that language be added to the BART Order recognizing that when a named emission unit is permanently taken out of service, the BART limits no

longer apply to the decommissioned unit or any replacement unit. A replacement unit would be subject to New Source Review requirements and Best Available Control Technology requirements.

3. Removal of all text in the Order related to Boilers #1 and #3. These two subject to BART boilers have been replaced and decommissioned.
4. To reduce the need for amending the RH-SIP to reflect improvements to monitoring recordkeeping and reporting requirements by allowing Ecology to issue a regulatory order to modify those requirements. The modified requirements must provide equal or better information on the compliance status of the covered sources and emission units than the original requirements.

Analysis of Emission Limitation Change Request

In 2006 BP installed new ULN burners in the R-1 Heater. As part of permitting for installation of the R-1 ULN burner, a new heat exchanger was also installed. The pair of actions was anticipated to reduce the needed maximum firing rate for the R-1 Heater from 120 MMBtu/hr to 88 MMBtu/hr, while operating the hydrocracker at its full operating capability.

In 2010 BP applied for permits to construct and operate their “Clean Fuels Project.” The Clean Fuels Project was done to produce diesel fuel meeting the revised federal standards for the maximum sulfur content of diesel fuel used in land based off road engines. This project consisted of a number of projects. Those directly affecting the operation of the R-1 Heater were the new diesel fuel treatment capacity (the #3 Diesel Hydrotreater) and new hydrogen production capacity (the Hydrogen Plant #2). Applications for preconstruction air quality approvals for this project was submitted to the Northwest Clean Air Agency (NWCAA) and Ecology in 2010 and permits issued in 2011.

The Clean Fuels Project resulted in debottlenecking of the hydrocracker, allowing the hydrocracker to operate at the previous, higher throughput rates (but not above unit design capacity). The higher throughput rates have required the R-1 Heater to periodically operate at higher heat input rates (up to its rated capacity of 120 MMBtu/hr) than anticipated in 2006 and the emission limitations incorporated in the BART Order.

BP has requested a change to only the 24-hour maximum mass emission limit for the R-1 Heater. The current concentration limit, which is based on the emissions capability of the installed burners, is not proposed to change. The current limitation on this heater is 3.6 lb NO_x/hr reflecting operating the burners at 88 MMBtu/hr. The requested emission limitation is 4.9 lb NO_x/hr (based on operating the burners at 120 MMBtu/hr) resulting in a requested increase in hourly average emission of 1.3 lb NO_x/hr. The annual increase in emissions due to the requested change in the hourly maximum limit is 5.7 tons NO_x per year.

To offset the increase in NO_x from the revision to the R-1 Heater limitation, BP has requested that the emission limit for the R-1 Reboiler be adjusted downward to reflect the 2011–12 installation of ULN burners in the R-1 Reboiler. The emission limits are requested to go from the current 0.07 lb/MMBtu and 56.2 tons per year (tpy) (12.8 lb/hr) to 0.05 lb/MMBtu and 9.9 lb/hr (40.1 tpy) for a decrease of 16.1 tpy.

The net emission reduction as a result of these changes is a decrease in the allowable emissions of 1.6 lb/hr, on a 24-hour average and 10.4 tpy. This net emission reduction at these two subject to BART units results in a better than BART NO_x emission improvement from these two subject to BART heaters and greater reasonable progress than the currently approved emission limitations on these heaters.

Resolution of Other Requested Changes

BP has requested clarification on the applicability of BART emission limits for named BART emission units when they are decommissioned. BP is proposing a project to take two existing coking unit charge heaters out of service and replace them with new charge heaters. The existing coking units are subject to BART. BP wants to assure that the new BACT emission limits developed and required on the new units are the only emission limits that apply to the new equipment.

Ecology's view is that if the equipment has been decommissioned and replaced with new equipment subject to NSR requirements, the BART limits do not apply to the new emission units. This is because the new units did not commence construction or operation during the 15-year time period to be subject to BART. This is the same reason that the emission limits for Boilers #6 and #7 were removed from this Order in Revision 1.

Ecology is proposing to clarify this position by adding a new Condition 8 to the BART Order. This clarification could be specifically attached to each listed emission unit, or could be drafted to apply to any listed emission unit. The proposal is to use a single condition that applies to any unit specifically named in the BART Order.

BP requested that text in the Findings and in the Compliance Schedule sections of the BART Order related to replacement of the subject to BART Boilers #1 and #3. The BART emission requirement for these boilers is their decommissioning. Decommissioning occurred in December 2009. While removing these decommissioned units from the BART Order would simplify their inclusion in the Air Operating Permit issued to the plant, we are retaining the existing text to recognize the BART requirement on the boilers.

The company has requested an amendment to the Order allowing for Ecology to modify the monitoring, recordkeeping, and reporting requirements in this Order by issuance of a new Order containing the revised requirements. An identical condition is included in other Washington State issued BART Orders, but have not been approved into the SIP. This new condition will allow for more rapid modification of monitoring, recordkeeping, and reporting requirements in

the future to accommodate new monitoring methods and future requirements on the listed subject to BART emission units. If approved by Ecology, revised monitoring recordkeeping, and reporting requirements will need to be submitted to EPA as a revision to the SIP in order to be federally enforceable. The presence of 2 sets of enforceable reporting, recordkeeping, and reporting requirements will require both sets of requirements be included in the Air Operating Permit and the source to demonstrate it complies with both. This situation will exist until such time as EPA approves the revised requirements into the SIP.

Proposed BART Order Revisions

Condition 2.5.1.2. is being proposed to be revised as follows:

2.5.1.2. 4.9 lb/hr based on a 24-hour rolling average.

Condition 2.6.1. is being proposed to be revised as follows:

2.6.1. NO_x emissions from the boiler stack shall not exceed 0.05 lb/MMBtu or 9.9 lb/hr, both limits based on a 24-hour rolling average.

Condition 5 is proposed to be revised as follows:

5. Compliance with Conditions 1 through 4:

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

5.2 For all requirements in Conditions 2.5.1 and 2.6.1, compliance is required by July 1, 2014.

A new Condition 9. is being proposed as follows:

9. The BART requirements for an emission unit specifically listed in this Order do not apply after the BP Cherry Point Refinery has certified in writing to Ecology and NWCAA that the named BART emission unit has been permanently taken out of service and dismantled.

A new Condition 10. is being proposed as follows:

10. Ecology may, by regulatory order, revise the monitoring, reporting, and recordkeeping requirements specified in this Order. The revised monitoring, reporting, and recordkeeping methods must provide equal or better information on the compliance status of the source or emission unit subject to the revised monitoring, reporting, or recordkeeping methods.

Existing Condition 9. is being renumbered to be Condition 11.

State Implementation Plan Issues

The proposed modifications to hourly NO_x limitations for the Hydrocracker 1st Stage Reactor Heater (R-1 Heater) and the Hydrocracker 1st Stage Fractionator Reboiler (R-1 Reboiler) reduce the total NO_x emissions allowed to be emitted by BP by 10.4 tpy. As discussed above, the R-1 Heater will have a small increase in emissions. The new ULNB installed in the R-1 Reboiler will result in a decrease in emissions. The decrease in emissions is larger than the increase proposed to be allowed. The small increase of emissions allowed by the increase in hourly emission rate from the R-1 Heater is offset by the larger reduction occurring at the R-1 Reboiler.

The proposed change reflects a net decrease of 1.6 lb NO_x/hr and 10.4 tons NO_x per year of allowable emissions from the refinery. This results in a better than BART result for emissions reductions from subject to BART emission units at the refinery.

The reduction in emission rates of 1.6 lb NO_x/hr results in a daily emission rate decrease of 38.4lb NO_x/day, which is too small to model a Class I area effect. As a result, no dispersion modeling was done. However, in general, a reduction in NO_x emissions will result in a decrease in modeled visibility impairment within nearby Class I areas.

Specific changes to the BART Order proposed for submittal to EPA for approval as modifications to the approved BP Cherry Point Refinery BART Order:

Condition 2.5.1 (replacing SIP approved Condition 2.5.1)
Condition 2.6.1 (replacing SIP approved Condition 2.6.1)
Condition 3.2.1 (replacing SIP approved Condition 3.2.1)
Condition 5 (replacing SIP approved Condition 5)
Condition 9 of the Order Revision 2 (new Condition)

EPA did not approve the following conditions into the SIP. We are not requesting EPA approval of the following conditions in the revised BART Order:

Condition 8
Condition 10 (renumbered Condition 9)
Condition 11 (renumbered Condition 10)