RULE 1123 (REFINERY PROCESS TURNAROUNDS) COMPLIANCE PLAN

COMPANY NAME: BP West Coast Products LLC
BP Carson Refinery

COMPANY ID: 131003

MAILING ADDRESS: 2350 E 223rd Street
Carson, CA 90749

EQUIPMENT LOCATION: 2350 E 223rd Street
Carson, CA 90749

CONTACT INFORMATION: Maxine Sauer (as of Sept. '09)
maxine.sauer@bp.com
(310) 847-5649

BACKGROUND:

BP Carson Refinery is subject to Rule 1123 when performing refinery process turnarounds. Rule 1123(b)(1) prohibits venting to the atmosphere of any organic materials unless the vapors are "collected and contained for use as fuel or sent to a gas disposal system until the pressure in the vessel is below five pounds per square inch, gauge, or is within ten percent above the minimum gauge pressure at which the vapors can be collected, whichever is lower."

Rule 1123(b)(2) requires a compliance plan to be submitted to the District for every refinery that uses gas displacement or vacuum eduction to purge vessels during turnaround. The following criteria (at minimum) are required in this plan:

A) the procedure used for gas displacement or eduction
B) the disposition of the displaced or educed gases
C) the stage in the displacement or eduction procedure at which the disposition is changed from a control facility to atmospheric venting
D) the criteria by which said stage is identifiable.

In other words, the compliance plan requires **at least** a description of the gas displacement/eduction procedures, and explanations of where the gases go following the displacement/eduction, when the vessel is opened to the atmosphere, and how they determine when they can open to the atmosphere.

Rule 1123(c) requires certain records to be kept for two years, but since this is a Title V facility, these records will be kept for the required 5 years.

Table 1: Fee Summary

A/N	Application Status	Fee Sched.	Fee Paid	Balance Due
408099	21	C	$388.30	$0.00

Table 2: Permit History (as of 9/24/09)

Date	Event	Description
08/04/92	Approval of Plan	The Rule 1123 Compliance Plan that ARCO (the original owner of this facility) submitted was approved.
10/31/02	Submittal of New Application	BP West Coast Products submitted a Rule 1123 Compliance Plan (A/N 408099) to the AQMD for review and approval following the change of ownership of this facility.
09/24/09	Submittal of Revised Compliance Plan	BP submitted an updated plan, and then a final revised plan in response to several AI requests sent in Sept 2009. The final plan dated 9/24/09 supersedes all previous plans.

PLAN EVALUATION:

Table 3: Checklist for a Rule 1123 Compliance Plan

Requirements	Per Rule 1123 (b) (2)	Compliance?		Remarks
		Yes	No	
The procedure used for gas displacement or eduction	(A)	X		BP submitted two sets of procedures in its compliance plan. One set is followed for depressurization of general pressure vessels. The second set is applicable only for separator turnarounds associated with the wastewater treatment system. Since the wastewater treatment system is not subject to Rule 1123, this procedure will not be covered in this evaluation.
The disposition of the displaced or educed gases	(B)	X		During depressurization, vapors are vented to either the vapor recovery system, the flare gas recovery system, the flare, or an approved permitted portable air pollution control devices. Additional evaluation of these steps follows this table.
The stage in the displacement or eduction procedure at which the disposition is changed from a control facility to atmospheric venting	(C)	X		Atmospheric venting occurs initially when an OVA is used to check the hydrocarbon level within a vessel. These checks occur only after vessel pressure is <5psig. The hydrocarbon level continues to be checked with an OVA until the operator determines the vessel is as clean as possible for safety, health, and environmental reasons; at which point the vessel is fully opened to the atmosphere.
The criteria by which said stage is identifiable.	(D)	X		The pressure in the vessel is measured by a gauge. Operations personnel visually monitor the external gauge pressure to ensure the pressure is below 5psig before any atmospheric venting occurs.

Disposition of the Vapors Released From the Vessel

General Vessels

This procedure is followed by all process vessels containing organic materials, including but not limited to: towers, heat exchangers, knockout pots, accumulators, surge drums, and reactors.

First, any liquid is removed to tanks or to vacuum trucks with permitted air pollution control (APC). Next, the vessels are depressurized by venting to either the vapor recovery system, the flare, the flare gas recovery system, or approved permitted portable APCs. Portable APCs will not be analyzed in this evaluation, as any devices being used in turnarounds have already been permitted separately.

The vapor recovery (VR) system operates under negative pressure and is thus capable of reducing the vessel pressure to below 5psig. Vapors sent to the VR system are compressed, treated in the caustic treatment system and then sent on to either the No. 1 Crude Unit heater or to the refinery fuel gas system.

The flare and the flare gas recovery (FGR) systems operate at 2psig and so are also capable of reducing vessel pressure to below 5psig. The FGR system receives vent gases from the flare headers. The vapors are then compressed, treated at the Coker Unit amine contactors, and then sent to the fuel gas system. Vapors sent to the flare are controlled through combustion. Vapors generated from turnarounds are permitted to combust in flares according to Rule 1118.

Each of these control systems has the capacity to reduce the pressure in the vessel to below 5psig, and an external pressure gauge is visually monitored by operations personnel to ensure that the vessel is only opened (vented to the atmosphere) when the pressure is below the 5psig limit, including when personnel check the hydrocarbon level with an OVA.

Some units may require additional purging (with either steam or N_2) to further clean the vessels of hydrocarbons through gas displacement. These dilute vapors are sent to either the VR or FGR systems, except in the conditions described below, where the dilute vapors are sent directly to the flare.

Both the VR and FGR systems have minimum vapor BTU requirements, as the gases they process are sent to the process unit heaters for combustion. There is also a maximum limit on the volume of gases each system can compress. Large volumes of inert gases (i.e., from purge gases) can cause fuel system imbalance. High N_2 concentration can also cause potential mechanical damage to the compressors. In order to avoid these problems, some turnaround vapors are sent directly to the flare.
In summary, all vapors from turnaround processes of general vessels go to either the VR or FGR systems unless:

- the vapor does not meet the minimum BTU value, or

- the volume of vapor exceeds the capacity of the recovery systems, or
- the volume of inert gas is high enough to cause fuel system imbalance, or
- the N_2 concentration is high enough to damage the compressors,

at which point the vapors are instead sent directly to the flare.

CONCLUSIONS AND RECOMMENDATIONS:

BP's compliance plan for Rule 1123 includes all of the necessary information required by 1123(b)(2). The plan provides for the maximum feasible control of emissions by sending all turnaround vapors to either the vapor recovery system, flare gas recovery system, flare, or permitted portable APCs. The plan also complies with the flare minimization goals of Rule 1118 (and the "maximum feasible control" mandate set by Rule 1123) by sending turnaround vapors to one of the recovery systems by default, and only sending vapors directly to the flare in situations where safety issues arise or equipment could be damaged.

As per Rule 1123(b)(3), plans should be approved if they provide for maximum feasible control of emissions of displaced or educed organic gases without causing damage to equipment, malfunction of pollution control or safety devices, or violations of safety regulations. BP's compliance plan dated 9/24/09 meets all of the requirements laid out by 1123(b)(3). Therefore approval of BP's Rule 1123 Refinery Process Turnarounds Compliance Plan is recommended subject to the following conditions:

1. Refinery process turnarounds shall be conducted in accordance with the attached plan dated September 2009, unless otherwise specified below.

2. During refinery process turnaround, the vapors released from the vessel shall not vent to the atmosphere at any time unless the vessel has been depressurized to below 5 psig, or is within 10 percent above the minimum gauge pressure at which the vapors can be collected, whichever is lower, and has met all the requirements in Condition No. 3 and 4 below.

3. To depressurize vessels pursuant to Condition No. 2, the vapors released from the vessel shall be recovered by (i) the fuel gas system, (ii) the vapor recovery system (VR system), (iii) the flare gas recovery system (FGR system), or (iv) portable vapor recovery equipment with a valid permit to receive vent gases generated from process turnaround operation. The vapors released from the vessels may be directed to a flare provided that all flares have been operated in accordance with flaring minimization procedures pursuant to Rule 1118(c)(3) and (c)(4).

4. If inert gases are used for refinery process turnaround, the operator shall comply with all of the following requirements:

(A) Prior to introducing inert gases into the vessel, the operator shall initially depressurize the vessel in accordance to Condition No. 2 and 3.

(B) After introducing inert gases into the vessel, the vapors released from the vessel shall be recovered by the fuel gas, VR, or FGR systems.

(C) Condition No. 4B above shall not apply if the facility operator can demonstrate that recovering the vapors would result in: (i) equipment damage due to incompatibility with recovery system equipment or with refinery fuel gas systems, (ii) malfunction of pollution control equipment or safety devices, or (iii) violations of safety regulations. The vapors are permitted to be routed directly to the flare if condition (i), (ii), or (iii) is met and provided that all flares have been operated in accordance with flaring minimization procedures pursuant to Rule 1118(c)(3) and (c)(4).

5. The operator shall keep records of each refinery process unit turnaround, in a manner approved by the AQMD, for the following items:

- The date the unit was shut down.
- The date, time, and hydrocarbon concentration measured when the vapors from the vessel were first discharged into the atmosphere.
- The approximate amount of hydrocarbons emitted into the atmosphere.
- Records to demonstrate that condition No. 4C is applicable

The records shall be kept for at least five years and made available for District inspection upon request.