

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <i>ENGINEERING &amp; COMPLIANCE</i> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 1
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

**RULE 1118**  
**REVISED FLARE MONITORING AND RECORDING PLAN**

**COMPANY NAME:** BP West Coast Products LLC  
 BP Carson Refinery

**COMPANY ID:** 131003

**MAILING ADDRESS:** P.O. Box 6210  
 Carson, CA 90749-6210

**EQUIPMENT LOCATION:** 2350 E 223<sup>rd</sup> Street  
 Carson, CA 90749

**CONTACT INFORMATION:** Eric Daley  
 eric.daley@bp.com  
 (310) 847-5636

**BACKGROUND:**

District Rule 1118 was adopted in 1998, and then was significantly amended on November 4, 2005. The purpose of Rule 1118 is to monitor and record data on refinery and related flaring operations, and to control and minimize flaring and flare related emissions. The rule applies to all flares used at petroleum refineries, sulfur recovery plants, and hydrogen production plants. BP Carson Refinery currently operates 5 general service elevated flares subject to this rule.

The 2005 amendment of Rule 1118 largely focused on minimizing flaring, limiting affected facilities to flaring only during the following events: emergencies, shutdowns, startups, turnarounds or essential operational needs. This amendment also set performance targets for sulfur emissions resulting from flaring at refineries, and created new monitoring/recordkeeping requirements in order to ensure compliance with the flare minimization goals. This rule also required affected facilities to submit a Revised Flare Monitoring and Recording Plan (FMRP) on or before June 30, 2006 as per 1118(f)(1)(A). At minimum, the revised plan must contain the information required by 1118(f)(3)(A)-(Q). The information required in the revised plan helps the District to ensure that the refinery is in compliance with the flare minimization requirements and performance targets in Rule 1118.

As an affected facility, BP submitted their revised FMRP on 6/30/06 under A/N 458527. BP submitted several revisions of this original, revised FMRP (see Table 1 below). The most recent revision of the plan being evaluated herein for approval is Revision B, dated, August 2010, which was submitted on August 30, 2010. Additional information regarding the use of water seal to determine start/end of flare event was also submitted following the last revision of the plan. The revised plan (under A/N 458527), as approved, will supersede the amended plan approved under

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 2
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

A/N 341699 on December 2, 2005. All applications submitted by BP for 1118 compliance are summarized below in Table 1.

**Table 1 – AQMD Applications Submitted**

A/N	Description	BCCAT	Status	Type	Date Submitted	Requested Action
458527	Revised Rule 1118 Flare Monitoring & Recording Plan	666056	21	25	6/30/06	Approval of Revised FMRP
468152	Modification to FMRP submitted under A/N 458527	666056	52*	25	4/24/07	Approval to use flow monitoring devices on Coker and Hydrocracker flares
468888	Modification to FMRP submitted under A/N 458527	666056	50*	25	5/8/07	Approval to use flow monitoring devices on all 5 flares
477993	Modification to FMRP submitted under A/N 458527	666056	50*	25	2/8/08	Approval to use flow monitoring devices on No. 5 flare

\*Superseded A/N 468152, 468888, and 477993 were cancelled 8/30/11.

The fees submitted for the subject application are shown below in Table 2.

**Table 2 – Fee Summary**

A/N	Equipment	Type	Fee Sched.	Fee Paid	Balance Due
458527	Flare Monitoring & Recording Plan	25	C	\$469.94	\$0.00 <sup>(1)</sup>

<sup>(1)</sup>Note that BP will be billed for T&M for the evaluation of this plan as per the hourly rate specified in Rule 306 current at the time the application was deemed complete.

**RULE COMPLIANCE AND PLAN EVALUATION:**

As an affected facility, BP is subject to the new monitoring and recording requirements listed in Attachment A of Rule 1118, which specifies the requirements for the flare monitoring systems, including

1. Continuous Flow Measuring Device
2. On/Off Flow Indicator
3. Data Recording System
4. Continuous and Semi-Continuous Gaseous Stream Higher Heating Value (HHV) Flare Monitoring Systems
5. Continuous and Semi-Continuous Gaseous Stream Total Sulfur (TSC) Monitoring Systems

The requirements for items No. 4 and 5 (HHV and TSC analyzers) resulted in a variance being issued by the AQMD Hearing Board extending the deadlines for 1118 compliance until pilot programs had been completed for the HHV analyzers (at Chevron's El Segundo refinery) and the TSC analyzer (at the subject BP refinery). The District approved the HHV analyzers on March 14, 2008 and the TSC analyzer on May 20, 2008. Once these analyzers had been approved, the

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 3
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

refineries under SCAQMD jurisdiction were held responsible for 1118 compliance under the deadlines approved by the Hearing Board. Increments of progress were approved by the Hearing Board and met by BP in the Regular Variance HB Case No. 5357-36 (shown in Table 3 below). Final compliance was achieved in this case on January 20, 2010. Note that the dates shown below vary from the original increments of progress approved by the District Hearing Board following several requests by BP to extend the deadlines due to unavoidable delays.

**Table 3 – Compliance Status for HB Case No. 5357-36**

<b>Increment of Progress</b>	<b>Device No.</b>	<b>Deadline</b>
(i) Submit applications and fees (with requests for expedited processing) for all required permits and approvals with all applicable agencies and municipalities	C1302, Coker	N/A
	C1308, HC	08/03/07
	C1305, FCC	12/13/07
	C1661, No. 5	04/03/08
	D1326, HDS	04/17/08
(ii) Issue purchase orders for necessary TSC and HHV analyzers, and all related equipment and work (including requests for liquidated damages for late performance)	C1302, Coker	09/05/08
	C1308, HC	09/05/08
	C1305, FCC	11/24/08
	C1661, No. 5	11/24/08
	D1326, HDS	11/24/08
(iii) Commence installation of TSC and HHV analyzers and flow meters.	C1302, Coker	02/22/09
	C1308, HC	03/22/09
	C1305, FCC	05/19/09
	C1661, No. 5	06/18/09
	D1326, HDS	08/17/09
(iv) Complete installation of TSC and HHV analyzers and flow meters.	C1302, Coker	04/13/09
	C1308, HC	05/11/09
	C1305, FCC	07/08/09
	C1661, No. 5	08/07/09
	D1326, HDS	10/06/09
(v) Conduct all District-required testing of TSC and HHV analyzers.	C1302, Coker	07/07/09
	C1308, HC	09/22/09
	C1305, FCC	10/22/09
	C1661, No. 5	01/07/10
	D1326, HDS	12/30/09
(vi) Provide written test results of TSC and HHV analyzers to District.	C1302, Coker	07/21/09
	C1308, HC	09/28/09
	C1305, FCC	11/04/09
	C1661, No. 5	01/16/10
	D1326, HDS	01/13/10
(vii) Notify Clerk of the Hearing Board in writing (with copy to District Prosecutor) that final compliance has been achieved.	C1302, Coker	07/28/09
	C1308, HC	10/05/09
	C1305, FCC	11/11/09
	C1661, No. 5	01/20/10
	D1326, HDS	01/20/10

The BP refinery has 5 general service flares in use, as described in Table 4 below. Each uses natural gas for both pilot and purge lines. For more detailed information, including process flow diagrams

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 4
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

and interconnections between the flares and process units, see Appendices A through E of BP's FMRP.

In addition to process gases generated within the refinery, BP's Flare #5 also receives a stream from a neighboring facility (Ineos Polypropylene, Facility ID #124808). This waste stream, generated during startup and shutdown of the polypropylene plant, is inherently low in sulfur. Because this stream contains polypropylene fines that are incompatible with the vapor recovery compressors, it bypasses BP's flare gas recovery system and goes directly to the flare. This stream does not meet the Rule 1118 definition of vent gas ("any gas generated at a facility subject to this rule"), and therefore combustion of this gas in the flare is not subject to any of the monitoring, recordkeeping, reporting, or operational requirements specified in Rule 1118. Although not required by rule, the District has requested that BP submit a courtesy notification directly to the District when Ineos vent gases are being flared (see letter dated September 14, 2011 in file).

**Table 4 – Flare Service Type & Capacity**

Flare	Service Type	Design Capacity	Total Pilot Gas (Type, Flow)		Purge Gas (Type, Flow for Purge 2 & 3)		Vapor Recovery
			Gas	Flow	Gas	Flow	
South Area (Coker)	General	601,000 lb/hr (MW at 63 lb/lbmol)	Natural Gas	150 scfh	Natural Gas	<800 + 5,400 scfh	Common Flare Gas Recovery System (FGRS) 150,000 scfh capacity
#5 (Isom)	General	1,450,000 lb/hr (MW at 35 lb/lbmol)	Natural Gas	250 scfh	Natural Gas	<800 + 3,000 scfh	
FCC (Fluid Catalytic Cracking)	General	427,000 lb/hr (MW at 44 lb/lbmol)	Natural Gas	200 scfh	Natural Gas	<800 + 1,800 scfh	
Hydrocracker	General	417,000 lb/hr (MW at 5.7 lb/lbmol)	Natural Gas	150 scfh	Natural Gas	<800 + 2,600 scfh	
FFHDS (Fluid Feed Hydrodesulfurization)	General	293,300 lb/hr (MW at 11.4 lb/lbmol)	Natural Gas	200 scfh	Natural Gas	<800 + 1,000 scfh	

Note that each flare has 3 pilots and 3 purge streams. Purge 1 ("Sweep Gas") is introduced upstream of the water seal and is used to sweep the header line back to the Flare Gas Recovery System. Purge 2 ("Water Seal and Line Purge") is located immediately downstream of the water seal (on the flare side) to purge the water seal drum and the line to the flare. Purge 3 ("Riser Purge") is introduced at the base of the flare stack to maintain a positive flow into the flare riser. See Individual Flare Schematics in Appendix D of BP's Revised FMRP.

As required by Rule 1118 and under the variance imposed under Hearing Board Case No. 5357-36, BP has installed the following monitoring equipment on each flare as shown in Table 5. These meters have all been certified by the District (see Attachment B to this evaluation). All 5 flares have the same Panametrics flow meters installed.

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 5
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

**Table 5 – Flare Monitoring & Recording Equipment (All Flares)**

Criteria	Vent Gas Flow	Higher Heating Value (HHV)	Total Sulfur (TS)	
Type	Ultrasonic	Mass Spectrometer	PUVF	
Make	GE Panametrics	Hamilton Sunstrand	Thermo Electron Corp.	
Model	GF 868	MGA 1200EC	SOLA II	
Range	0.1 to 275 ft/s	0 to 3,000 BTU/ft <sup>3</sup>	<u>Low Range</u> Coker & HC: 10 – 2500 PPM FCC, #5, HDS: 1 to 200 PPM	<u>High Range</u> Coker & HC: 1500 PPM to 15% FCC, #5, HDS: 100 to 10,000 PPM
Precision	+/- 1% at 0.5 to 275 ft/s	+/- 2%	+/- 2%	
Accuracy	+/- 20% of reading (range 0.1-1 ft/s) +/- 5% of reading (range 1-275 ft/s)	--	--	
Calibration, Maintenance, QA/QC, etc	As specified by manufacturer and approved QA/QC Plan	As specified by manufacturer and approved QA/QC Plan	As specified by manufacturer and approved QA/QC Plan	

Note that the Riser Purge streams are located upstream of the Panametrics flow meters, but are monitored separately at each flare stack by Rosemount 8800 Series Vortex flow meters and these emissions reported using the factors for natural gas included in Attachment B of Rule 1118. Note that this is permitted under Rule 1118(g)(8)(C), which requires facilities monitor the purge gas streams but does not specify that these meters be certified by the District.

As required by Rule 1118(f)(3)(A)-(Q), BP submitted the following information. Note that references to “FMRP” refer to Revision B of BP’s Revised Flare Monitoring and Recording Plan dated August 2010.

**Table 6 – Plan Completeness**

Requirement	1118 (f)(3)	Compliance		Comments
		Yes	No	
Facility plot plan showing the location of each flare in relation to the general plant layout	(A)	√		See Appendix A of FMRP.

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 6
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

Requirement	1118 (f)(3)	Compliance		Comments
		Yes	No	
Flare Information:	(B)			
<ul style="list-style-type: none"> <li>type of flare service, as defined in subdivision (b)</li> </ul>		√		See Table 1 of FMRP.
<ul style="list-style-type: none"> <li>design capacity</li> </ul>		√		See Table 1 of FMRP.
<ul style="list-style-type: none"> <li>operation and maintenance for each flare</li> </ul>		√		See p. 3-4 of FMRP.
Pilot and Purge Gas Information (for each flare):	(C)			See pp. 4-5 of FMRP.
<ul style="list-style-type: none"> <li>type(s) of gas used</li> </ul>		√		N.G
<ul style="list-style-type: none"> <li>actual set operating flow rate in SCFM</li> </ul>		√		See Table 2 of FMRP
<ul style="list-style-type: none"> <li>maximum TSC expected for each type of gas used</li> </ul>		√		Limited by contract with So Cal Gas (per 8/27/10 T/C with Chris Cornell of BP)
<ul style="list-style-type: none"> <li>average HHV expected for each type of gas used</li> </ul>		√		Limited by contract with So Cal Gas (per 8/27/10 T/C with Chris Cornell of BP)
Drawing(s), preferably to scale with dimensions, and an as built PFD of the flare(s) identifying major components	(D)	√		See Appendices C through E of FMRP.
Representative flow diagram showing the interconnections of the flare system(s) with vapor recovery system(s), process units and other equipment as applicable	(E)	√		See Appendices B through C of FMRP.
Complete description of the:	(F)			
<ul style="list-style-type: none"> <li>assist system process control</li> </ul>		√		See p. 6 of FMRP.
<ul style="list-style-type: none"> <li>flame detection system</li> </ul>		√		See p. 6 of FMRP and Memo to File from MH12 dated 8/31/10.
<ul style="list-style-type: none"> <li>pilot ignition system</li> </ul>		√		See p. 6 of FMRP.
Complete description of the gas flaring process for an integrated gas flaring system which describes the method of operation of the flares	(G)	--		N/A – BP’s flares do not operate in a staged manner. Although most process units can vent to more than 1 flare, this is only as a backup (see Appendix B of FMRP). BP’s flares are not integrated.
Complete description of the vapor recovery system(s) which have interconnection to a flare, such as:	(H)			

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 7
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

Requirement	1118 (f)(3)	Compliance		Comments
		Yes	No	
<ul style="list-style-type: none"> <li>compressor description(s)</li> </ul>		√		See p. 7 and Appendix C of FMRP, also Process 21, Systems 10 and 11 in FP.
<ul style="list-style-type: none"> <li>design capacities of each compressor and VRS</li> </ul>		√		FGRS Train #1: 15,000 scfh, FGRS Train #2: 15,000 scfh. See p. 7 and Appendix C of FMRP.
<ul style="list-style-type: none"> <li>method currently used to determine and record the amount of vapors recovered</li> </ul>		√		See p. 7 and Appendix C of FMRP.
Drawing(s) showing the locations of the following for each flare and the method of choosing each location:	(I)			See pp. 7-8 and Appendix D of the FMRP.
<ul style="list-style-type: none"> <li>sampling</li> </ul>		√		
<ul style="list-style-type: none"> <li>flow meter device</li> </ul>		√		
<ul style="list-style-type: none"> <li>on/off flow indicators</li> </ul>		--		N/A – BP does not utilize on/off flow indicators.
<ul style="list-style-type: none"> <li>HHV analyzer</li> </ul>		√		
<ul style="list-style-type: none"> <li>TSC analyzer</li> </ul>		√		
Detailed description of the manufacturer's specifications for the following, including (but not limited to) make, model, type, range, precision, accuracy, calibration, maintenance, QA, and other specifications as referenced in Attachment A.	(J)			See Table 5 above and attached QAQC plan approved on August 24, 2010
<ul style="list-style-type: none"> <li>flow metering devices</li> </ul>		√		
<ul style="list-style-type: none"> <li>on/off flow indicators</li> </ul>		--		N/A – BP does not utilize on/off flow indicators.
<ul style="list-style-type: none"> <li>HHV analyzers</li> </ul>		√		
<ul style="list-style-type: none"> <li>TSC analyzers</li> </ul>		√		
Complete description and data used to determine and to set the actuating and deactuating and the method to be used for verification of each setting for each on/off flow indicator	(K)	--		N/A – BP does not utilize on/off flow indicators.

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 8
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

Requirement	1118 (f)(3)	Compliance		Comments
		Yes	No	
Complete description of proposed analytical and sampling methods or estimation methods, if applicable, for determining HHV and TSC of the flare vent gas	(L)	√		See pp. 10-11 of FMRP. Note that the proposed data substitution method in Appendix F including the use of flare gas samples was withdrawn by BP (see 7/21/11 email from Eric Daley). The District's default data substitution method found in Rule 1118 Attachment B will be required.
Complete description of the proposed data recording, collection and management, and any other specifications and information referenced in Attachment A for each flare monitoring system	(M)	√		See pp. 11-12 of FMRP.
Complete description of proposed method to determine, monitor and record the followings for gases vented to a flare for each flare event:	(N)			Note that the proposed data substitution method in Appendix F including the use of flare gas samples was withdrawn by BP (see 7/21/11 email from Eric Daley). The District's default data substitution method found in Rule 1118 Attachment B will be required.
<ul style="list-style-type: none"> <li>• total volume</li> </ul>		√		See pp. 12-13 of FMRP.
<ul style="list-style-type: none"> <li>• HHV</li> </ul>		√		See p. 14 of FMRP.
<ul style="list-style-type: none"> <li>• TSC</li> </ul>		√		See p. 14 of FMRP.
Schedule for the installation and operation of each flare monitoring system	(O)	√		See pp. 15-16 of FMRP and Table 3 above.
Complete description of any proposed alternative criteria to determine a sampling flare event for each specific flare, if any, and detailed information used for the basis of establishing such criteria	(P)	--		N/A – BP has not proposed any such alternative criteria.

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 9
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

Requirement	1118 (f)(3)	Compliance		Comments
		Yes	No	
Request to use the alternative sampling program pursuant to subparagraph (g)(4)(C), if applicable, with a complete description of proposed QA/QC procedures to be used in a test program to determine the correlation between the results from the alternative sampling program and the testing and monitoring methods specified in subdivision (j)	(Q)	--		N/A – BP has not proposed any such alternative sampling program.

Note that BP has also requested to use water seal records to determine the start and end of flare events, as allowed under the definition of flare event in 1118(b)(6). See Attachment I for full discussion and evaluation of BP's proposal.

**DISCUSSIONS AND RECOMMENDATIONS:**

The revised Flare Monitoring and Recording plan, along with the supplemental information, submitted by the BP Carson refinery contains all of the requirements pursuant to Rule 1118 (f)(3).

Therefore, based on the information contained in the plan, the compliance plan (except the proposed alternate data substitution procedure in Appendix F, which was withdrawn by BP per Eric Daley's 7/21/11 email) is approved subject to the following conditions. This revised FMRP (copy attached), as approved, will supersede the amended plan approved under A/N 341699.

**CONDITIONS**

- The owner/operator shall perform monitoring and recording of the operating parameters for the following flares in accordance with this approved compliance plan and other applicable requirements of Rule 1118(g). The monitoring and recording shall be performed at all times except when the flare monitoring system is out of service for reasons described in Rule 1118(g)(5)(A).

Flare	South Area (Coker)	#5 (Isom)	FCC	Hydrocracker	FFHDS
<b>Service Type</b>	General	General	General	General	General

- A flare event occurs when the velocity exceeds 0.1 ft/s and a water seal level indicator identified below drops below 20% (where a water seal level of 20% is equivalent to water seal static pressure of 7.2" WC). A flare event ends when the same water seal level indicator exceeds 60% (equivalent to a static pressure of 39.6" WC) for 60 consecutive minutes, inclusive of those 60 minutes.

Flare	South Area (Coker)	#5 (Isom)	FCC	Hydrocracker	FFHDS
<b>Level Indicator</b>	70LI339	80LI370	11LI360	03LI395	23LI349

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 10
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

3. A flare event lasting 24 hours or less shall be considered a single flare event even when the event occurs in two consecutive days. When a flare event continues for more than 24 hours, each calendar day shall be a separate flare event.
4. The continuous HHV analyzer, total sulfur analyzer and gas flow meter used in this flare plan shall meet or exceed the minimum specifications described in Attachment A of Rule 1118. The flare monitoring system shall also be certified by the AQMD. For quality assurance procedures, the owner/operator shall follow the Guidelines for Rule 1118 Quality Assurance and Quality Control Plan published by the AQMD.
5. When the maximum range of a flow meter is exceeded, the flow rate shall be assumed to be the maximum design capacity of the flare.
6. Volumetric flow rates of vent gases shall be corrected to standard conditions of 14.7 psia and 68°F.
7. Whenever the flow meter, HHV and/or TSC analyzer(s) is down due to breakdowns or maintenance, the owner or operator shall only use the data substitution method referenced in Attachment B of Rule 1118 to calculate and report flare emissions except when an alternative data substitution procedure has been approved in writing by the District. Analyzer(s) downtime shall be limited pursuant to Rule 1118(g)(5)(A).
8. The owner/operator shall calculate emissions of criteria pollutants from each flare and each flare event using the methods described in Attachment B of Rule 1118.
9. The owner or operator shall install and maintain flow meters to monitor and record the pilot and all purge gas flows to the general service flares.
10. The owner/operator shall monitor the flares at all times for presence of a pilot flame using a thermocouple that will alarm the owner or operator in the event of a flame out. The owner or operator shall re-ignite the pilot immediately after a pilot flame out occurs.
11. The owner/operator shall notify the Executive Officer within one hour of any unplanned flare event with emissions exceeding either 100 pounds of VOC or 500 pounds of sulfur dioxide, or a vent gas volume exceeding 500,000 standard cubic feet. The owner/operator shall also notify the Executive Officer by telephone at least 24 hours prior to the start of a planned flare event with emissions exceeding either 100 pounds of VOC or 500 pounds of sulfur dioxide, or a vent gas volume exceeding 500,000 standard cubic feet.
12. The owner/operator shall conduct a Specific Cause Analysis for any flare event, excluding planned shutdown, planned startup and turnaround, resulting in any of the followings: (a) 100 pounds of VOC emissions. (b) 500 pounds of sulfur dioxide emissions. (c) 500,000 standard cubic feet of vent gas combusted. The analysis shall identify the cause, event category, and duration of the flare event and describe any mitigation and corrective action taken to prevent recurrence of a similar flare event in the future. Unless an extension is granted, the owner/operator shall submit Specific Cause Analysis to the Executive Officer within 30 days of the event.

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE</b> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 11
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

13. The owner/operator shall conduct an analysis and determine the relative cause for a flare event that results in combustion of more than 5,000 standard cubic feet of vent gas. A Specific Cause Analysis may be submitted to satisfy this condition.
14. The owner/operator shall submit a complete Flare Minimization Plan for approval of the Executive Officer no later than 90 days from the end of a calendar year in which flare emissions exceeding the annual performance targets set by Rule 1118(d)(1). The plan shall comply with the requirements of Rule 1118(e).
15. The owner or operator shall maintain records in a manner approved by the Executive Officer for the following.
  - a. Flare event data collected pursuant to paragraph (g)(3), (g)(4), (g)(5), (g)(6) and subparagraph (g)(8)(C) of Rule 1118 as applicable.
  - b. Total daily and quarterly emissions of criteria pollutant from each flare and each flare event along with all information specified by Rule 1118(i)(5)(B).
  - c. Monitoring records from water seal level indicators pursuant to Condition No. 2.
  - d. Pilot flame failure report.
  - e. Planned and unplanned flare monitoring system downtime report that includes date and time and explanation for taking the system out of service.
  - f. Information to substantiate any exemptions taken under Rule 1118(k).
  - g. Specific Cause Analysis completed pursuant to Condition No. 12.
  - h. Relative Cause Analysis completed pursuant to Condition No. 13.
  - i. Annual acoustical pressure relief device leak survey conducted pursuant to Rule 1118(c)(1)(C).
  - j. Annual sulfur dioxide emissions for all flares at the refinery normalized over the crude oil processing capacity in calendar year 2004.
  - k. Video records pursuant to Rule 1118(g)(7).

Within 30 days after the end of each calendar quarter, the owner/operator shall submit a quarterly report to the AQMD Refinery Compliance Team to the below address. Items (a) through (h) shall be submitted quarterly in electronic format. Hard copy of item (i) shall be submitted with the quarterly report for the quarter which the survey was conducted. Hard copy of item (j) shall be submitted with the last quarterly report for the year. Item (k) shall be made available to the Executive Officer upon request.

All records required by this condition shall be certified for accuracy in writing by the responsible facility official and maintained for at least five years.

SOUTH COAST AIR QUALITY MGMT DISTRICT  
 REFINERY COMPLIANCE  
 1500 WEST CARSON STREET, SUITE 115  
 LONG BEACH, CA 90810

16. The owner/operator shall comply with all provisions of this approved Revised Flare Monitoring and Recording Plan subject to the conditions above, unless the plan is suspended, revoked, modified, reissued, or denied, as well as all other applicable

	<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <i>ENGINEERING &amp; COMPLIANCE</i> APPLICATION PROCESSING AND CALCULATIONS	<b>PAGES:</b> 12	<b>PAGE:</b> 12
		<b>A/N:</b> 458527	<b>DATE:</b> 2/22/12
		<b>PROCESSED BY:</b> Meredith Hankins	<b>CHECKED BY:</b> KN, TV

requirements of Rule 1118. Violation of any of the terms of the plan is a violation of Rule 1118.