REVISED FLARE MONITORING AND RECORDING PLAN

Facility Information	**CHEVRON PRODUCTS COMPANY** **ID# 800030** **TITLE V: YES** **RECLAIM: NOX, SOX** **ZONE: COASTAL** **CYCLE: 2**
Mailing Address	**324 W. EL SEGUNDO BLVD.** **EL SEGUNDO, CA 90245**
Equipment Address	**(SAME AS ABOVE)**
Contact Information	**KIMBERLY DAMICO** (310) 615-5901

BACKGROUND

The El Segundo Refinery of Chevron Products Company operates six (6) flares that are subject to the requirements of District Rule 1118. These 6 flares make up three separate intergrated flare systems within the refinery; consisting of two systems with interconnections and one ground flare that operates by itself. The first interconnected system consists of the ALKY, FCC and LSFO flares and the second system consists of the COKER and ISOMAX flares. Each flare operates as an individual flare system. The ground flare (F-2510) service only the SNR plant during periods of planned shutdowns and all startups. Note that the NH3 flare that previously serviced the #4H2S and NH3/H2S plants has been permanently shut down since late 2006 and the flare header for these units has been tied into the ISOMAX flare relief system. An integrated flare system allows process unit(s) the flexibility to continue operations if one of the flare within the system is shut down for maintenance by diverting vent gas to the other flare(s).

The District amended Rule 1118 on November 4, 2005 in an effort to further control and minimize flare emissions. Stricter requirements for monitoring, recordkeeping, and reporting of flare activities were imposed in this latest rule amendment in order to better quantify flare emissions. Reliable and accurate flare emissions data are crucial in ensuring petroleum refineries do not exceed the performance targets for SOx emissions pursuant to paragraph (d) of Rule 1118.

All South Coast refineries confronted technical challenges to comply with the monitoring requirements in Table 1 of Rule 1118(g)(3) by the compliance deadline of July 1, 2007 because the technology to continuously monitor total sulfur concentrations and higher heating values of flare vent gases had not been developed. The AQMD Governing Board foresaw this difficulty and adopted a resolution with the November 4, 2005 amendment of Rule 1118 that directed District staff to work closely with the Western States Petroleum Association (WSPA) and its members to develop the technologies. Two test trials were conducted at two separate South

Coast refineries to demonstrate the feasibilities of commercially available analyzers. BP volunteered to conduct a pilot test for a total sulfur analyzer while Chevron agreed to conduct a demonstration project for a higher heating value (HHV) analyzer. Completion of these pilot projects and obtaining District approvals for the technologies did not happen until March 2008 for the HHV analyzer and May 2008 for the total sulfur concentration analyzer.

The El Segundo Refinery, along with other South Coast refineries, filed a regular variance petition for relief from Rule 1118 requirements on March 7, 2007. The Hearing Board held a common hearing for all the refineries on April 24 through April 26, 2007 and El Segundo Refinery's variance petition, Case No. 831-343 , was granted. The El Segundo Refinery was ordered to comply with an Increment of Progress for the variance that specified a schedule for installing and testing of the analyzers on their flares. Final compliance with the variance order for all affected flares was due and completed by June 24, 2010.

The El Segundo Refinery is an affected facility subject to the provisions of paragraph (f) of Rule 1118. As such, a revised Flare Monitoring and Recording Plan (FMRP) was required to be submitted to the District by 6-30-06 for approval pursuant to Rule 1118(f)(1)(A). Chevron submitted this application (A/N 458606) along with the revised plan for approval on 6-30-06. Subsequently, two additional applications (A/N 463698 in late 2006 and 476873 in late 2007) were submitted to amend the plan due to operational changes that affected flaring operations at the refinery. Therefore, Chevron's revised FMRP consists of the originally proposed plan dated June 30, 2006 and the supplemental information submitted under the two subsequent applications mentioned above. Table 4 below provides application number references for each item of the proposed plan being reviewed for approval. Finally, the complete plan has been consolidated under file folder A/N 458606 and applications A/Ns 463698 and 476873 have been cancelled. This revised FMRP, as approved, will supersede the amended plan approved on December 2, 2005 under A/N 359189.

The following information was provided by the Chevron refinery:

Table 1
Flare Information

Flare Name	Device/Equipment ID	Type of Service	Pilot Gas	Purge Gas	Vent Gas Recovery
Alky	C3012/ME-5901	General	N.G.	N.G.	yes
Coker	C1785/F-3700	General	N.G.	N.G.	yes (by LSFO VRS)
FCC	C1746/F-309	General	N.G.	N.G.	yes
Isomax	C1749/F-950	General	N.G.	N.G.	yes
LSFO	C1757/F-2500	General	N.G.	N.G.	yes
SNR	C4116/F-2510	Clean	N.G.	N.G.	no

Note: Clean service of C4116 combust only hydrogen gas with relatively fixed composition with no sulfur content.

In the revised plan, Chevron proposes to use the following methods to monitor and record the operating parameters of the flares:

Table 2
Vent Gas Monitoring[1] Methods

Flare	Gas Flow	Gas Higher Heating Value	Total Sulfur Concentration
Alky	**Type**: Ultrasonic **Make**: Panametrics **Model**:GF868 **Range**: 0.1 – 250 fps	**Type**: TCD **Make**: Siemens **Model**: Maxum II **Range**: 0-3,000 BTU/ft3	**Type**: Pyrolysis/FPD **Make**: Siemens **Model**: Maxum II **Range**: 10-600 ppm 450-20,000 ppm 1.5 – 25%
Coker			
FCC			
Isomax			
LSFO			
SNR[2]		Use HHV based on design data, see Table 2 and 3 of addendum A/N 476873.	No sulfur compound, based on fixed composition of vent gas.

[1]*Monitoring and recording are continuous. Additional analyzer specifications and requirements are contained in Chevron's QAQC Plan.*
[2]*The Panametrics flow meter is used to measure flow once flow control valve PV-093C is open greater than 0%.*

Table 3
Pilot, Purge Gas and Visible Emissions Monitoring Methods

Flare ID	Pilot/Purge Gas (N.G.) Flow	Pilot Flame Detection	Visible Emissions
Alky	Orifice meters	Thermo-couple/Infrared[1]	Color video
Coker		FID/Infrared[1]	Color video
FCC		Thermo-couples/Infrared[1]	Color video
Isomax		Thermo-couples/Infrared[1]	Color video
LSFO		Thermo-couple/Infrared[1]	Color video
SNR	Use actual set operating flow rate of 4.5 and 245 SCFM for pilot and purge gas, respectively.	Thermo-couple	Color video

[1]Infrared sensor is used as a backup only.

Clean service flare, F-2510, is used exclusively to combust vent gas consisting of hydrogen gas with trace amounts CO and CO_2 from the SNR plant during periods of planned shutdowns and

all startups. This flare does not handle any relief loads or emergency flaring during normal operations of the SNR. F-2510 is completely shut down and isolated from use when the SNR plant is fully operational.

FLARING OPERATIONS AND FLARE GAS RECOVERY

Alky Flare

The Alky flare services all relief valves and blow downs in the Alky and Yard DIB units. A knockout drum (V-5894) removes any liquid from the vent gases of the Alky flare header before going to the vapor recovery system or flare. A water seal drum is vertically situated at the base of the flare stack to create a seal and provide the necessary backpressure for the flare gas recovery unit to recover all gases vented to the relief header. Water is continuously added and overflowed through the high overflow line to ensure the water level is maintained at its designed level.

Under normal operation, vent gases leaving V-5894 is recovered by vapor recovery compressor K-5880A. An interconnection from the Alky flare header to the FCC flare header enables the FCC flare gas recovery system to recover vent gas from the Alky plant whenever K-5880A is out of service and/or during high rate of relief gas from the Alky plant. Flaring occurs when the flare gas recovery systems are not able to keep up with the vent gases from the Alky during emergencies, startups, shutdowns, turnarounds or essential operating needs and the static head (seal) pressure in the flare seal drum is breached. The Panametrics flow meter shown in Table 2 above is located downstream of V-5894 but upstream of the water seal drum.

Coker Flare

All process relief valves in the Coker unit tie into the Coker flare header. There is no dedicated flare gas recovery system for the Coker unit but piping configuration enables relief gases from the Coker unit to be recovered by the LSFO vapor recovery system. A knockout drum (V-515) removes any liquid from the relief gases in the Coker header before going to LSFO vapor recovery system or flare. A water seal drum (V-3700) was installed to create a seal and provide the necessary backpressure for the flare gas recovery unit at the LSFO to recover all gases vented to the relief header. To ensure the water level is always at its designed level, water is continuously added to V-3700 and overflowed through the overflow line. During normal operation, gases leaving V-515 are recovered by the LSFO vapor recovery system. Relief gases are combusted at the Coker flare stack when the LSFO VRS is not able to keep up with the vent gases from the Coker units during emergencies, startups, shutdowns, turnarounds or essential operating needs and the static head (seal) pressure in V-3700 is breached. The Panametrics flow meter shown in Table 2 is located downstream of V-515 but upstream of V-3700. Unlike the other four general service flares at Chevron, the Coker flare is equipped with an approved Flame Ionization Detection (FID) system for pilot flame detection in lieu of thermocouple.

FCC Flare

The FCC Relief System collects plant blowdowns and handles various emergency releases from the FCC unit, part of the Alky unit, #2 H2S plant, DFH, #1 ATP and Yard Gas Relief. All relief valves and blowdowns are routed through knockout drums V-212 and V-305 for removal of any entrained liquid before going to vapor recovery or flare. A water seal drum is situated at the base of the FCC flare stack to create a seal and provide the necessary backpressure for the vapor recovery compressors (4) at the FCC to recover all the gases vented to the relief header. To ensure the water level is always at its designed level, water is continuously added and overflowed through the high overflow line. The FCC flare was designed with a water seal

bypass pressure controller to help control smoking by providing a smooth flow transition to the flare.

As part of an integrated flare system with the Alky and LSFO flares, the FCC flare provides backup relief for these two flares whenever they are out of service. Likewise, the LSFO flare provides backup relief for the FCC flare whenever it is taken out of service. Under normal operation, vent gases leaving V-305 and V-212 are recovered by vapor recovery compressors K-301/302 and K201A/201B, respectively. Once the compressors are fully loaded and vent gas flow into the relief system continues to the point where the water seal is compromised, combustion of the relief vent gases take place at the flare stack. The Panametrics flow meter in Table 2 is located downstream of the knockout drums but upstream of the water seal.

In addition to the FCC Relief System that feeds into the FCC flare as described above, a separate isolated emergency fuel gas vent line from the Fuel Gas Mix Drum, V-500, also feeds into the FCC flare. This fuel gas vent line is used to relieve sweet fuel gas from V-500, to prevent commingling of sweet fuel gas with header relief gases, during a temporary fuel gas imbalance caused by the loss of consumer(s). The heat and sulfur content of the sweet fuel gas from V-500 is relatively constant and complies with NSPS Subpart J 160 ppm H2S limit. V-500 is equipped with a pressure control valve that is normally in the closed position. In the event of a temporary fuel gas imbalance, the control valve opens to allow flow to the flare. The pressure control valve is monitored and recorded continuously. When the valve is closed, no gas is being vented to the flare. When the valve is more than 0% open, the valve is considered on and opens to the flare. This dedicated vent line from V-500 is equipped with its own Panametrics flow meter. The HHV and TS analyzers for the FCC flare are located downstream of this fuel gas vent line and the FCC Relief System described above.

Isomax Flare

The Isomax flare is part of an integrated flare system with two flare headers. The main Isomax header services the PRVs and equipment vents for the Isomax, Air Liquide, LPG Rack and the NH3 header service the #4 H2S, NH3/H2S plants. The connection of the NH3 header to become part of the Isomax flare system was made after the NH3 flare was permanently removed from service in late 2006. Note that Air Liquide (Facility ID 148236) is a hydrogen plant facility located within the Chevron El Segundo refinery and only vent sources upstream of Air Liquide's reaction section [Pressure Swing Adsorption (PSA) unit] are routed to the Isomax flare header.

A knockout drum (V-849) removes entrained liquid from the relief gases in both headers before going to the FGR system or flare. Each header has its own dedicated water seal drum, V-950 and V-960, respectively, that creates a seal and the necessary backpressure for the flare gas recovery unit to recover all gases vented to the relief headers. To ensure the seal level is always at its designed level, water is continuously added to V-950 and V-960 and overflowed through the high overflow line. During normal operations, the gases leaving knock out drum V-849 will be recovered by the FGR and sent to the #4 H2S Plant for fuel gas treatment. Once either header pressure exceeds the water seal pressure, the water seal will be broken and vent gas will flow to flare stack for combustion. There should be no flow to the flare as long as the main header pressure is operated below V-950 water seal pressure and the NH3 header pressure is operated below V-960 water seal pressure. Each flare header is equipped with a Panametrics flow meter upstream of V-950 and V-960. Common HHV and TS analyzers are located downstream of both seal drums.

LSFO Flare

In addition to the Cogen, LPD, part of the Alky and LSFO units, the Coker relief gases (as described above under Coker flare) are also tied into the LSFO relief system. All relief gases are routed through knockout drum, V-2500, for removal of any liquid from relief gases in the LSFO header before going to the VRS or flare. A water seal drum is vertically situated at the base of the stack to create the seal and necessary backpressure for the flare gas recovery unit to recover all gases vented to the relief header. To maintain the water level at its designed level, water is continuously added and overflowed through the high overflow line. During normal operation all relief gas and blowdowns are routed through V-2500 prior to being recovered by the vapor recovery compressors. There should be no flow to the flare as long as the header pressure is operated below the water seal pressure.

During emergencies, startups, shutdowns, turnarounds and essential operating needs, the header pressure can potentially exceed the water seal pressure if the FGR compressor(s) cannot keep up with increase reliefs into the flare header. When that happens, the water seal in the flare will be compromised and the vent gases will relieve to the flare. There should be no flow to the flare as long as the header pressure is operated below the water seal pressure. The Panametrics flow meter and HHV/TS analyzers required by Rule 1118 are located upstream of the water seal drum but downstream of V-2500.

SNR Flare

The SNR flare is a clean service flare installed to combust clean vent gas containing greater than 2000 ppm CO from the SNR Plant during periods of planned shutdowns and all startups. This flare does not handle any relief loads or emergency flaring during normal operations of the SNR and is completely shut down and isolated from use when the SNR plant is fully operational.

There are no vapor recovery and water seal drum for this flare. The flare operates when flow control valve, PV-093C, opens to the ground flare as indicated by valve position. PV-093C is located downstream of knockout drum V-2510, used for removal of entrained liquids in the vent gas. When the PV-093C valve position is greater than 0% open, the flare is considered "on" and thus a flare event has started. Whenever the valve position is equal to or less than 0% open, the flare is considered "off" and a flare event has ended. The position of PV-093C is continuously monitored and recorded in the plant's DCS. A Panametrics flow meter is located downstream of V-2510 but upstream of PV-093C to measure vent gas flow rate. Rule 1118 (g)(3) allows the use of "on/off" flow indicators as a mechanism to determine gas flow and flare events.

Chevron's proposal to use valve position monitoring of PV-093C for determination of a flare event in lieu of the Rule's definition under subparagraph (b)(6) and use the Panametrics flow meter is deemed acceptable since this flare is in clean service. However, once a flare vent starts, Chevron would use the certified flow meter to report gas flow volume to the flare. Chevron also proposed to use emission factors derived from Rule 1118's default factors adjusted to accommodate the unique charaterestics of the SNR vent gas and provided vent gas composition data to support its request. The emissions factors were reviewed/approved by the District after Chevron submitted revised emission factors in June 2010 after incorporating changes based on District comments in November 2009. This information can be found in the application folder for reference.

FLARE EVENT DETERMINATION FOR GENERAL SERVICE FLARES

Pursuant to Rule 1118(b)(6), Chevron requested approval to use monitoring records of the flare water seal and header pressure for determination of the onset of a flare event for the general service flares. Water seal pressure, flare header pressure, vent gas flow monitoring data along with flare digital images were submitted to the District for evaluation of this proposed method. However, the data failed to demonstrate a consistent correlation with flaring when the water seal is breached and vice versa. The data contained too many inconsistencies for the District to deem Chevron's proposed method effective and reliable in lieu of the rule definition of a flare event, which defaults to using vent gas flow detection by the District certified ultrasonic flow meter starting at 0.1 fps. Therefore, Chevron's proposed method cannot be generically approved without a case by case analysis of the monitoring data for each flare event.

Note that, theoretically, there should be no flow to the flare when the flare header pressure is operating below the water seal pressure. However, flare activities have, at times, been observed even when corresponding monitoring data indicate the water seal is intact. This unexplained phenomenon is likely attributed to the complex dynamics of flare water seal systems.

PLAN EVALUATION

PLAN COMPLETENESS

A Revised Flare Monitoring and Recording Plan shall contain, at minimum, all of the information specified by paragraphs (f)(3)(A) through (f)(3)(Q) of Rule 1118. As shown in Table 4, Chevron's proposed plan has the required information specified by paragraph (f)(3) of the rule.

TABLE 4: Checklist for a Revised Flare Monitoring and Recording Plan

Requirements	Rule 1118 (f)(3)	Yes	Comment
A facility plot plan showing locations of flares	(A)	√	See General Plot Plan Dig SR-145000-10
Flare information: (1) type of service (2) design capacity (3) operation and maintenance	(B)	 √ √ √	See discussion under 'Flare System' in the revised plan submitted on 6-22-10 under A/N 458606.
Pilot and purge gas information: (1) type of gas used (2) actual set operating flow rate (3) Expected maximum total sulfur content (4) Expected average higher heating value	(C)	 √ √ √ √	See discussion under 'Pilot and Purge Gas' in the revised plan submitted on 6-22-10 under A/N 458606.
As built process flow diagrams and drawings identifying flare header, flare stack, flare tip/ burners, purge gas system, pilot gas system, ignition system, assist system, knockout drum, water and molecular seal, etc...	(D)	√	See PFD for each flare system in the revised plan submitted on 6-22-10 under A/N 458606.

Requirements	Rule 1118 (f)(3)	Yes	Comment
Flow diagrams showing the interconnections of the flares to vapor recovery system and process unit	(E)	√	See (D) response above.
Descriptions of the assist system process control, flame detection system and pilot ignition system.	(F)	√	See discussion under 'Assist System, Flame detection and Pilot Ignition System' for all flares (except F-950) in the revised plan submitted on 6-22-10 under A/N 458606. For F-950, see revised plan submittal dated December 2011 under A/N 458606.
Description of the gas flaring process if an integrated gas flaring system is being operated.	(G)	√	See discussion under 'Flare System' for each flare in the revised plan submitted on 6-22-10 under A/N 458606 and AI response dated 8/3/2006.
Description of the vapor recovery system: (1) type of compressor (2) design capacity of each compressor (3) design capacity of vapor recovery system (4) method to record amount of vapors recovered	(H)	 √ √ √ --	See discussion under 'Description of Vapor Recovery System' for each flare that has vapor recovery in the revised plan submitted on 6-22-10 under A/N 458606.
Drawings with dimension showing: (1) location of sampling equipment (2) locations of HHV, TSC analyzers (3) location of flow meter (4) location of on/off indicator	(I)	 √ √ √ --	See P&ID Dwg # SI-146564-C for F-309 and PFDs submitted on 6-22-10 under A/N 458606. Final as-built P&IDs for other general service flares to be submitted by Chevron (see 2-9-12 AI request)

Requirements	Rule 1118 (f)(3)	Yes	Comment
Manufacturer's specifications for existing and proposed flow meters and on/off flow indicator, HHV and Ts analyzers: (1) make, model and type (2) range, precision and accuracy (3) calibration, maintenance and quality assurance procedures	(J)	 √ √ √	See Table 2 above. Also see 'Flare Monitoring System' section of revised plan submitted on 6-22-10 under A/N 458606 and QAQC plan submitted on 6-10-10.
Description and data used to determine actuating and de-actuating settings for on/off flow indicator , and method to verify these settings.	(K)	√	See discussion on SNR flare in the revised plan submitted on 6-22-10 under A/N 458606. Other flares do not use on/off flow indicator.
Description of analytical and sampling methods or estimation method, if applicable, to determine high heating value and total sulfur content of vent gases.	(L)	√	No longer applicable since Chevron has already installed continuous in-line HHV & TS analyzers to meet Rule 1118 requirements. However, Chevron proposes to use automatic samplers as a back-up to determine HHV & TS in lieu of the data substitution method in Rule 1118 during analyzer downtime. Consideration and approval will be made by AQMD on a case by case basis.

Requirements	Rule 1118 (f)(3)	Yes	Comment
Description of data recording, collection and management system.	(M)	√	See discussion under 'Data Logging/Recording' for each flare in the revised plan submitted on 6-22-10 under A/N 458606.
Description of proposed method to determine, monitor and record total gas volume, HHV and total sulfur concentrations of vent gases.	(N)	√	See 'Overall System Operation' section in the revised plan submitted on 6-22-10 under A/N 458606.
Schedule for installation and operation of flare monitoring system.	(O)	√	Flares have been placed on modified schedule per Variance, Case No. 831-343. Final compliance was met on 6-24-10.
Description of any proposed alternative criteria to determine a sampling event for each specific flare.	(P)	--	'Sampling flare event' was an intermediate definition effective prior to the installation of continuous monitors for HHV and total sulfur concentration. Defining sampling event is not relevant in approving of the proposed plan.
A request to use an alternative sampling program pursuant to paragraph (g)(4)(C)	(Q)	--	No alternative is being proposed during the interim period.

RECOMMENDATIONS:

The Revised Flare Monitoring and Recording plan submitted by Chevron contains all of the requirements pursuant to Rule 1118 (f)(3). Therefore, the plan is recommended for approval with the following conditions:

1. The owner/operator shall perform monitoring and recording of the operating parameters for the below 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	ALKY (C3012)	COKER (C1785)	FCC[1] (C1746)	ISOMAX[1] (C1749)	LSFO (C1757)	SNR (C4116)
Service Type	General	General	General	General	General	Clean

[1]*Flare with two (2) Panametrics flow meters.*

2. For the general service flares, a flare event occurs when the flow velocity of vent gas in the flare equals to 0.10 feet per second or greater. The flare event ends when the flow velocity drops below 0.12 feet per second unless the owner/operator can provide verifiable monitoring records, approved by the AQMD, to demonstrate no more vent gas was combusted in the flare for purpose of determining when the flare event ends.

   The volumetric flow thresholds, in standard cubic feet per hour (SCFH), for the flow velocities specified in Condition 2 are as follow:

Flare	SCFH @ 0.10 fps	SCFH @ 0.12 fps
Alky	3,456	4,147
Isomax	4,522	5,426
Coker	1,764	2,117
FCC	2,542	3,050
LSFO	3,456	4,147

3. For the SNR flare, a flare event occurs when the valve position of flow control valve, PV-093C, is not in the fully closed position (> 0%). A flare event ends when the valve position of PV-093C is fully closed (≤ 0%). The owner/operator shall install and maintain a valve position indicator to continuously monitor and record the valve position of PV-093C from 0% to 100% open.

4. 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.

5. The continuous HHV analyzers, total sulfur analyzers and gas flow meters 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 Flare Monitoring System Quality Assurance and Quality Control Plan published by the AQMD.

6. 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.

7. Volumetric flow rates of vent gases shall be corrected to standard conditions of 14.7 psia and 68°F.

8. Whenever the continuous flow meter, HHV and/or TSC analyzer for the flare is out of service due to breakdowns or maintenance, the owner/operator shall use the data substitution method referenced in Attachment B to calculate and report flare emissions except when an alternative data substitution procedure has been approved in writing by the District. Flow meter and analyzer downtime shall be limited pursuant to Rule 1118 (g)(5)(A).

9. For general service flares, 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.

10. For the SNR flare, the owner/operator shall use the following equations and emission factors to calculate emissions of criteria pollutant for each flare event:

Vent Gas (Clean Service Flare)		
Air Pollutant	Equation	Emission Factor
ROG	$E = V_v$ x EF	1.2 lb/MMScf
NOx	$E = V_v$ x EF	30.05 lb/MMScf
CO	$E = V_v$ x EF	315.47 lb/MMScf
PM10	$E = V_v$ x EF	1.29 lb/MMScf
SOx	$E = V_v$ x EF	0.00 lb/MMScf

Where:

E = Emissions in pounds

V_v = Volume flow of vent gas, in million standard cubic feet (mmSCF) at 14.7 psia and 68°F

EF = Shown Emission factor for the pollutant

11. The owner/operator shall install and maintain a flow meter to monitor and record the pilot and purge gas flow to the general service flares.

12. The owner/operator shall monitor the flare at all times for presence of a pilot flame using a thermocouple or equivalent device approved by the Executive Officer that will alarm the owner/operator in the event of a flame out. The owner or operator shall re-ignite the pilot immediately after a pilot flame out occurs.

13. 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 exceeding 500,000 standard cubic feet of flared vent gas. 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 500,000 standard cubic feet of combusted vent gas.

14. 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 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.

15. The owner/operator shall conduct an analysis and determine the relative cause of 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.

16. The owner/operator shall submit a complete Flare Minimization Plan for approval by the Executive Officer no later than 90 days from the end of a calendar year in which flare emissions exceeded the annual performance targets set by Rule 1118(d)(1). The plan shall comply with the requirements of Rule 1118(e).

17. 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. Pilot flame failure report.
    d. Planned and unplanned flare monitoring system downtime report that includes date and time and explanation for taking the system out of service.
    e. Information to substantiate any exemptions taken under Rule 1118(k).
    f. Monitoring records of valve position indicator(s) pursuant to Condition No. 3.
    g. Specific Cause Analysis completed pursuant to Condition No. 14.
    h. Relative Cause Analysis completed pursuant to Condition No. 15.
    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 address below. 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
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