

September 12, 2013

Mr. Craig Sakamoto
Staff Regulatory Strategist
3700 West 190th Street
Torrance, CA 90509

Re: Rule 1118 Flare Monitoring and Recording Plan - **Reissuance**
Application Number: 458580
Plan Owner/Operator: ExxonMobil Oil Corporation, Torrance Refinery
Facility ID: 800089
Facility Address: 3700 West 190th Street, Torrance, CA 90509

Dear Mr. Sakamoto:

The South Coast Air Quality Management District (AQMD) has reviewed the revised Flare Monitoring and Recording Plan (FMRP) submitted on June 29, 2006 by the Torrance Refinery to comply with District Rule 1118(f)(1)(A). Based on the information contained in the plan and additional information submitted, the compliance plan, except the proposed data substitution, flare event determination and flare pilot monitoring methods, is approved for reissuance subject to the following conditions. This revised FMRP, as approved, will supersede the plan approved under A/N 458580 on December 13, 2012 but will retain the same reference application number.

The Torrance Refinery shall comply with all provisions of this approved revised Flare Monitoring and Recording Plan unless the plan is suspended, revoked, modified, reissued, or denied, as well as all other applicable requirements of Rule 1118. Violation of any terms of the plan is a violation of Rule 1118.

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	65F-3	65F-4	65F-8	55F-1
Service Type	General	General	Emergency	Clean

2. Up through January 31, 2014, for general service flares 65F-3 and 65F-4, a flare event occurs whenever the water seal bypass valve PV-65108 is not in the fully closed position ($> 0\%$ open), OR whenever the flare header pressure P65073 is greater than 53" of static water pressure, OR whenever the flare header pressure P65073 is equal to or greater than 24" but less than or equal to 53" of static water pressure ($24'' \text{ H}_2\text{O} \leq \text{P65073} \leq 53'' \text{ H}_2\text{O}$) and the flow velocity of vent gas in the flare is equal to or greater than 1.0 feet per second, OR whenever the flare header pressure P65073 is less than 24" of static water pressure ($\text{P65073} < 24'' \text{ H}_2\text{O}$) and the flow velocity of vent gas in the flare is equal to or greater than 1.7 fps . The flare event ends when the water seal bypass valve PV-65018 is in the fully closed position ($\leq 0\%$), AND the flare header pressure P65073 is at or below 24" of static water pressure, AND the flow velocity of vent gas in the flare drops below 1.7 feet per second. After January 31, 2014, this condition shall be superseded by Condition no. 3.
3. On February 1, 2014 and thereafter, for general service flares 65F-3 and 65F-4, a flare event occurs when the flow velocity of vent gas in the flare equals to or greater than 0.10 feet per second or whenever the water seal drum bypass valve, PV-65108, is not in the fully closed position ($> 0\%$ open). The flare event ends when the flow velocity drops below 0.12 feet per second and the valve position of PV-65108 is in the fully closed position ($\leq 0\%$ open). The owner/operator shall obtain a written approval from the Executive Officer prior to using monitoring records of the flare water seal level, header pressure and closure of control valves to demonstrate that no more vent gas was combusted in the flare for the purpose of determining when a flare event begins and ends.
4. The owner/operator shall not proactively open the 65F-3 water seal bypass valve PV-65108 until a flare event has been confirmed by visible flaring and the flare header pressure or vent gas flow parameters in Conditions no. 2 and 3 indicate a flaring event is in effect. After a flare event has been determined to be in effect by ExxonMobil's 'Refinery Procedure for Flare Event Confirmation' protocol, the opening and closing of the bypass valve shall be conducted in accordance with ExxonMobil's 'Refinery Procedure for Flare Water Seal By-Pass' protocol.
5. For emergency service flare 65F-8, the valve position of main vent gas valve (PV-65042) and combustion stages on/off flow switch valve shall be used to determine when a flare event begins or ends. A flare event occurs when the valve position of PV-65042 OR any of the on/off flow switch valve for the 65F-8 combustion stages is not in the fully closed position ($> 0\%$ open). A flare event ends when PV-65042 AND all of the on/off flow switch valves are fully closed ($\leq 0\%$ open). The owner/operator shall install and maintain a valve position indicator with audible and visual alarms to monitor the opening of PV-65042 and a valve position indicator to continuously monitor and record the position of the on/off flow switch valve for each combustion stage of 65F-8. The audible and visual alarm monitoring system for PV-65042 shall be installed and in full operation by January 31, 2014.
6. For emergency service flare 65F-8, the owner/operator shall use the on/off flow switch of the stage burner valves to determine gas flow rate to the flare. Whenever the on/off flow

switch valve of combustion stage for 65F-8 is not in the fully closed position, the vent gas flow rate shall be the maximum design capacity up to that stage. As an example, when the 3rd stage flow switch valve is not in the fully closed position, the flow rate will be the sum of the maximum flow for stages 1, 2 and 3. The vent gas flow shall be assumed to be at the maximum design capacity of the flare when the 4th stage flow switch valve is not in the fully closed position.

7. 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.
8. 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 Flare Monitoring System Quality Assurance and Quality Control Plan published by the AQMD.
9. 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.
10. Volumetric flow rates of vent gases shall be corrected to standard conditions of 14.7 psia and 68°F and recorded as one-minute averages.
11. Whenever the flow meter, HHV and/or TSC analyzer(s) is down due to breakdowns or maintenance, the owner or operator shall 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).
12. For the general and emergency 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.
13. For clean service flare 55F-1, the owner/operator shall calculate emissions of criteria pollutants for each flare event using the following equations and emission factors:

When Combusting Vent Gases from Tanks 400x30 and 400x31		
Air Pollutant	Equation	Emission Factor, EF
ROG	$E = V_c \times EF$	7 lb/mmSCF
NO _x	$E = V_c \times EF$	130 lb/mmSCF
CO	$E = V_c \times EF$	35 lb/mmSCF
PM10	$E = V_c \times EF$	7.5 lb/mmSCF
SO _x	$E = V_c \times EF$	6.7 lb/mmSCF

When Combusting Vent Gas from Tank 510x4		
Air Pollutant	Equation	Emission Factor, EF
ROG	$E = V_c \times 3500 \times EF$	0.003 lb/mmBTU
NOx	$E = V_c \times 3500 \times EF$	0.13 lb/mmBTU
CO	$E = V_c \times 3500 \times EF$	0.032 lb/mmBTU
PM10	$E = V_c \times 3500 \times EF$	0.0014 lb/mmBTU
SOx	$E = V_c \times 3500 \times EF$	0.00193 lb/mmBTU

Vent gas flow, V_c shall be calculated using the following pressure control valve equation whenever the valve position detector indicates the valve is not in the fully closed position:

$$SCFH = Cg2 * [528 / SG * (T + 460)]^{1/2} P1 * \sin[(180 / \pi * 59.64 / C1) * ((P1 - P2) / P1)^{1/2}]$$

Where:

- Cg2 = Gas sizing coefficient for valve opening as a function of linear percent open
- SG = Specific gravity
- T = Temperature
- P1 = Tank pressure, psia
- P2 = Downstream pressure prior to flaring, psia
- C1 = Valve constant

14. The owner/operator shall install and maintain a flow meter to monitor and record the pilot and all purge gas flows to the general and emergency service flares; 65F-3, 65F-4 and 65F-8.
15. For clean service flare 55F-1 only, the pilot gas flow shall equal to the maximum design capacity of 1057 SCFH.
16. The owner/operator shall install and maintain thermocouples to monitor the presence of a pilot flame on elevated flares 65F-3, 65F-4 and 55F-1 during the next turnaround for each flare. If flares 65F-3 and 55F-1 are not equipped with thermocouples that are fully operational by the end of year 2015 and flare 65F-4 is not equipped with thermocouples that are fully operational by the end of year 2016, the owner/operator shall submit a written request for an extension to the District for approval. Until the thermocouples are installed, infrared sensors shall be used to monitor the presence of a flame at the flare tips. The operator shall verify the presence of a flame and reignite the pilot if necessary immediately after an alarm of a flame out is sounded.
17. The owner/operator shall monitor the 65F-8 flare at all times for presence of a pilot flame using thermocouples that will alarm the operator in the event of a pilot flame out. The operator shall reignite the pilot after a pilot flame out occurs.

18. 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.
19. 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.
20. 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.
21. 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 exceeding the annual performance targets set by Rule 1118(d)(1). The plan shall comply with the requirements of Rule 1118(e).
22. 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 R1118(i)(5)(B).
 - c. Pilot flame failure report.
 - d. Planned and unplanned flare monitoring system downtime reports that include 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 Conditions No. 2, 3, 4, 5 and 6.
 - g. Specific Cause Analysis completed pursuant to Condition No. 19.
 - h. Relative Cause Analysis completed pursuant to Condition No. 20.
 - 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 or 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 electric 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 MANAGEMENT DISTRICT
REFINERY COMPLIANCE
1500 WEST CARSON STREET, SUITE 115
LONG BEACH, CA 90810

Please review the plan carefully and discard the earlier approved version. If you have any questions, please contact Mr. Thomas Lee at (909) 396-3138 or tlee1@aqmd.gov.

Sincerely,

Danny Luong, P.E.
Senior Manager
RECLAIM Admin., Refinery Permitting,
Retail Gasoline Dispensing

cc: Ed Pupka
A/N 458580 file