Shell Chemical LP
Norco Plant
P.O. Box 10
Norco, LA 70079-0010
Tel +1 (504) 465 6480
Fax +1 (504) 465 6360
Internet http://www.shell.com/chemicals

CERTIFIED MAIL #7018 0360 0000 7301 6639
Chief, Environmental Enforcement Section
Environment and Natural Resource Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044-7611
Reference Case NO. 90-5-2-1-11603

February 27, 2023

SUBJECT: UNITED STATES V. SHELL CHEMICAL LP
CIVIL ACTION NUMBER 2:18-cv-1404-EEF-JVM
SECOND HALF 2022 SEMI-ANNUAL REPORT
LDEQ AI NO. 26336

Dear Sir or Madam:

Enclosed is the semi-annual report for the second half of 2022 for Shell Chemical LP's Petrochemical Plant in Norco, Louisiana (Shell Norco). This report is being submitted pursuant to the requirements in Section IX of Civil Action Number 2:18-cv-1404-EEF-JVM which became effective on February 6, 2019. This report covers the period from July 1, 2022 through December 31, 2022.

NO EPA ACTION IS REQUIRED WITH RESPECT TO THIS SUBMISSION: It is being submitted to fulfill a requirement under the Consent Decree for information purposes only. Any issues encountered or anticipated with respect to meeting the Compliance Programs of this Consent Decree are addressed in Section IX of this report.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Jacob Foy at (504) 465-6955 or Jacob.Foy@shell.com.

Sincerely,

Tammy Little
General Manager – Shell Energy and Chemicals Park Norco
Attorney-in-Fact – Shell Chemical LP

JSF/mlc

Enclosures

cc: W/Attachments

EES Case Management Unit
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Re: DJ #90-5-2-1-11603

United States Attorney for the Eastern District of Louisiana
650 Poydras Street, Suite 1600
New Orleans, LA 70130

Director, Air Enforcement Division
Office of Civil Enforcement
U.S. Environmental Protection Agency
Mail Code 2242-A
1200 Pennsylvania Avenue, N.W.
Ariel Rios Building
Room 1119
Washington, DC 20460-0001

Angela Marse
Enforcement Administrator
Office of Environmental Compliance
Louisiana Department of Environmental Quality
P.O. Box 4312
Baton Rouge, LA 70821-4312

Dwana C. King
Deputy General Counsel
Legal Division
Louisiana Department of Environmental Quality
P.O. Box 4302
Baton Rouge, LA 70821-4302

Via Email in PDF Format
eescdcopy.enrd@usdoj.gov: Re: DJ #90-5-2-1-11603
parrish.robert@epa.gov
foley.patrick@epa.gov
angela.marse@la.gov
dwana.king@la.gov
Lourdes.Iturralde@la.gov
martin.padilla@shell.com
Pierre.espejo@shell.com

bcc: via email
Tammy Little (General Manager)
Jack Holden (Production Manager)
Martin Padilla (HSSE Manager)
Pierre Espejo (Legal)
Tracy Scott (Production Unit Manager, Olefins)
Louis Cancienne (Production Specialist)
Lance Dufrene (Production Specialist)
Allen Williams (Production Specialist)
Josh Revolta (Production Specialist)
Juan Ibieta (Senior Process Engineer)
Jay Wang (Process Engineer)
Umair Alvi (Process Engineer)
Emily Bergeron (Process Engineer)
Matt Lunsford (Process Engineer)
Spencer Simon (Process Engineer)
Gage Fos (Process Engineer)
Laura Sabolyk (Chemicals Environmental Team Lead)
Jacob Foy (Olefins Sr. Environmental Engineer)
Daniel Lee (Olefins Environmental Engineer)
Katie Brown (Chemicals Air Program Coordinator)
Renee Toups (Regulatory Advisor)

Chemical File: 706-15 Semi-Annual Reports

Electronic Filename:
CD/ORDERS/SETTLEMENTS > Chem Flare Consent Decree > CD COMPLIANCE > Reports > SemiAnnual > 2022 2H
22H2 Chem Flare CD Report.docx

Shell Chemical LP
Norco Chemical Plant
Consent Decree
Semi-Annual Report
2nd Half 2022
7/1/2022 – 12/31/2022

Report Index:

Section	Paragraph	Requirement	Report Page
V	19	Fenceline Monitoring Program	1
VI.C	39	Waste Gas Minimization	2
VI.D	48	Flare Gas Recovery	3
VI.E	51.c	Visible Emissions	4
IX	72	Semi-Annual Reports	5
IX	73	Annual Emissions Data	14
IX	74	Non-Compliance Review	15

Consent Decree Semi-Annual Report
Section V. Fenceline Monitoring Program
Paragraph 19

Fenceline Air Monitoring Reports

In accordance with Paragraph 19 of the Consent Decree, the following information is provided as part of this Semi-Annual Report:

a. **In spreadsheet format, the individual sample results for each monitor comprising the Fenceline Monitoring System, every two-week rolling annual average benzene concentration difference value (once annual averages are available), and the corresponding meteorological data for the relevant monitoring periods. The first two columns of each spreadsheet will list, respectively, the date and time for each sample taken; and**

   The individual sample results for each monitor and the corresponding meteorological data are provided in Attachment 1a in spreadsheet format.

b. **A detailed description of the actions and findings of any root cause analysis and corrective action(s) undertaken pursuant to Paragraph 3(g) of Appendix 1.8, including the known results of the corrective action(s) and the anticipated emissions reductions (in TPY per pollutant).**

   A detailed description of the root cause analyses and corrective actions for 2H 2022 can be found in Attachment 1b.

Consent Decree Semi-Annual Report
Section VI.C Waste Gas Minimization
Paragraph 39

Subsequent Updates to WGMPs

In accordance with Appendix 1.1 of the Consent Decree, Shell Norco submitted the Initial Waste Gas Minimization Plans (WGMP) for the four covered flares on July 30, 2020. A first updated WGMP was submitted on December 20, 2021, as required in Paragraph 38.

Pursuant to Paragraph 39, any subsequent updates to WGMPs will be submitted as part of the Semi-Annual Report after submission of the first updated WGMP.

Consent Decree Semi-Annual Report
Section VI.D Flare Gas Recovery
Paragraph 48

FGRS Shutdown

A FGRS Shutdown is due to operating conditions (such as high temperatures, large quantities of entrained liquid in Vent Gas, or contaminants in the Vent Gas that are unsuitable for recovery) outside the design operating range of the FGRS, including the associated knock-out drum so long as the outage is necessary for safety or to preserve the mechanical integrity of the FGRS.

In accordance with Paragraph 48 of the Consent Decree, each outage that occurred under Shutdown conditions are identified below, including the date, duration, cause(s), corrective action taken, and status of implementation of the corrective action.

FGRS Shutdown on 7/12/2022:

Shutdown dates and duration:
7/12/22 17:30 – 7/12/22 19:15 (1.75 hours).

Root Cause(s):

The OL-5 Flare Gas Recovery System (FGRS) tripped due to high level in the 2nd stage suction of compressor K-5020. The trip function mitigates potential risks to the equipment's mechanical integrity. The high level tripped the compressor because the level controller (LC-9332A) was out of service for maintenance. The backup controller (LC-9332B) was in service, however it did not have the same high level alarms as LC-9332A. This led to the level building in the compressor and the eventual trip.

Corrective Action(s):
Completed: Update control and alarm strategy for redundant controls (LC-9332A/B)

Consent Decree Semi-Annual Report
Section VI.E Flare Combustion Efficiency
Paragraph 51.c

Visible Emissions

Per Paragraph 51.b, each Covered Flare must operate with no Visible Emissions, except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours when the Covered Flare is In Operation and the Vent Gas flow rate is less than the smokeless design capacity of the Covered Flare.

Per Paragraph 51.c, the Semi-Annual report must include any instance where Visible Emissions were observed for more than five (5) minutes during any two (2) consecutive hours. The record must include the date and time of the 2-hour period and an estimate of the cumulative number of minutes in the 2-hour period for which emissions were visible.

Covered Flare (Documented Smokeless Capacity)	Date	Time of 2-hour Period	Estimate of Cumulative Number of Minutes in 2-Hour Period
OL-5 Ground Flare (100 Mlb/hr)	10/18/22	06:30 – 08:30	16
OL-5 Elevated Flare (440 Mlb/hr)	11/26/22	15:00 – 17:00	34
GO-1 Elevated Flare (130 Mlb/hr)	10/19/22	14:00 – 16:00	11
West Ops Elevated Flare (100 Mlb/hr)	None	NA	NA

Consent Decree Semi-Annual Report
Section IX. Reporting Requirements
Paragraph 72

A. Description of status of work performed and progress made toward implementing all requirements in Section VI (Compliance Requirements) at the Facility

Section VI (Compliance Requirements) includes the Instrumentation and Operation of Monitoring Systems (Paragraphs 22-24, 26-30) of which Shell Norco is required to meet compliance according to the schedule in Appendix 1.1 of the Consent Decree.

OL-5 Ground Flare
Shell Norco installed and operated all required instrumentation, controls, and monitoring systems set forth in Paragraphs 23-27 at the OL-5 Ground Flare by the Effective date as required by Appendix 1.1 of the Consent Decree. In addition, these instruments and monitoring systems meet the Specifications, Calibration, Quality Control, and Maintenance requirements in Paragraph 28 and 30. Shell Norco maintains a Monitoring Plan on site for the OL-5 Ground Flare instruments and monitoring systems per Paragraph 29.

GO-1 Elevated Flare
Shell Norco installed and operated all required instrumentation, controls, and monitoring systems set forth in Paragraphs 23-27 at the GO-1 Elevated Flare by December 31, 2019, as required by Appendix 1.1 of the Consent Decree. In addition, these instruments and monitoring systems meet the Specifications, Calibration, Quality Control, and Maintenance requirements in Paragraph 28 and 30. Shell Norco maintains a Monitoring Plan on site for the GO-1 Elevated Flare instruments and monitoring systems per Paragraph 29.

West Ops Elevated Flare
Shell Norco installed and operated all required instrumentation, controls, and monitoring systems set forth in Paragraphs 23-27 at the West Ops Elevated Flare by December 31, 2020, as required by Appendix 1.1 of the Consent Decree. In addition, these instruments and monitoring systems meet the Specifications, Calibration, Quality Control, and Maintenance requirements in Paragraph 28 and 30. Shell Norco maintains a Monitoring Plan on site for the West Ops Elevated Flare instruments and monitoring systems per Paragraph 29.

OL-5 Elevated Flare
Shell Norco installed and operated all required instrumentation, controls, and monitoring systems set forth in Paragraphs 23-27 at the OL-5 Elevated Flare by April 27, 2021. In addition, these instruments and monitoring systems meet the Specifications, Calibration, Quality Control, and Maintenance requirements in Paragraph 28 and 30. Shell Norco maintains a Monitoring Plan on site for the OL-5 Elevated Flare instruments and monitoring systems per Paragraph 29.

B. Description of any problems encountered or anticipated in meeting the requirements in Section VI (Compliance Requirements) at the Facility, together with implemented or proposed solutions

No issues were encountered in the second half of 2022 with respect to meeting the requirements in Section VI.

C. Description of status of any permit applications, including a summary of all permitting activity, pertaining to compliance with Consent Decree

The application for the Olefins Title V Renewal Permit (LDEQ Permit No. 2520-V8) was submitted on January 21, 2020 to LDEQ, EPA, and others as required in Section XVI of the CD (Notices). The application included the incorporation of Consent Decree requirements as required by Paragraph 64. Subsequently, a new Olefins Title V Permit (LDEQ Permit No. 2520-V9) was issued on November 17, 2020 and includes all requirements listed in Paragraph 65. The current Olefins Title V Permit is 2520-V10, issued on March 25, 2021.

The incorporation into the federally enforceable Olefins Title V Permit satisfies the requirements in Section VII and Paragraph 64 such that the requirements (i) have become and remain "applicable requirements" as that term is defined in 40 CFR 70.2; (ii) were incorporated into a federally enforceable Title V permit, and (iii) will survive termination of this Consent Decree.

D. Copy of any report that was submitted only to LDEQ and that pertains to compliance with this Consent Decree

No reports were only submitted to LDEQ that pertains to compliance with the Consent Decree.

E. Description of progress in satisfying its obligations in connection with the Fenceline Monitoring Program under Section V, including, at a minimum, a narrative description of activities undertaken; status of any construction or compliance measures; including the completion of any milestones set forth in the Fenceline Monitoring Plan attached as Appendix 1.8, and a summary of costs incurred since the previous report.

A report for timing and public transparency was submitted to EPA on October 31, 2019. A revised map was submitted to EPA on February 5, 2020, and the Fenceline Monitoring System commenced collecting data by February 6, 2020. The passive monitor locations have been sited according to the requirements in Appendix 1.8. All necessary physical construction has been completed.

F. Any updated WGMP for the Facility as required by Paragraph 39

<u>Subsequent Updates to WGMPs</u>
In accordance with Paragraph 39, after submission of the First Updated WGMP and on an annual basis thereafter until termination, an updated WGMP will be provided as part of the Semi-Annual Report if the site (a) installs a new Flare or permanently removes a Covered Flare from service, (b) connects a new Waste Gas stream to a Covered Flare, (c) modifies the Baseload Waste Gas Flow Rate to a Covered Flare, (d) installs an additional FGRS or materially alters the FGRS, or (e) changes the design of a Covered Flare.

Each update must describe, if and as necessary, changes in the information required in Subparagraphs 37.a-37.e, and 38.a-38.b.

Shell Norco submitted the Initial Waste Gas Minimization Plans (WGMP) for the four covered flares on July 30, 2020 per the requirement in Appendix 1.1 of the Consent Decree. A first updated WGMP was submitted on December 21, 2021, fulfilling the requirement in Paragraph 38 to submit an updated WGMP no later than eighteen months after July 30, 2020. No updates are required for this semi-annual period per Paragraph 39.

G. A summary of any internal flaring incident reports as required by Paragraph 42

Per Paragraph 42.a, Shell Norco is required to conduct an investigation into the root cause(s) of a Reportable Flaring Incident and prepare and keep as a record an internal report no later than forty-five (45) days following the end of a Reportable Flaring Incident.

Per Paragraph 42.b, a summary must be provided in the Semi-Annual Report for each Reportable Flaring Incident which occurred in the semi-annual period and must include:

- **i. Date;**
- **ii. Duration;**
- **iii. Amount of VOCs and HAPs emitted;**
- **iv. Root cause(s);**
- **v. Corrective action(s) completed;**
- **vi. Corrective action(s) still outstanding; and**
- **vii. An analysis of any trends identified by Defendant in the number of Reportable Flaring Incidents, the root causes, or the type(s) of corrective action(s).**

<u>OL-5 Elevated/Ground Flare Reportable Flaring Incidents</u>
Shell Norco has provided a detailed summary of the Reportable Flaring Incidents as required in this Semi-Annual Report in Attachment 2.

<u>GO-1 Elevated Flare Reportable Flaring Incidents</u>
Shell Norco has provided a detailed summary of the Reportable Flaring Incidents as required in this Semi-Annual Report in Attachment 3.

<u>West Ops Elevated Flare Reportable Flaring Incidents</u>
Shell Norco has provided a detailed summary of the Reportable Flaring Incidents as required in this Semi-Annual Report in Attachment 4.

Reportable Flaring Incident Analysis for Paragraph 42.b.vii			
Covered Flare	**Trend Description**	**# of RFI's**	**Trend Analysis (Root Causes, Corrective Actions)**
OL-5 Ground Flare/OL-5 Elevated Flare	Equilon Enterprises LLC dba Shell Oil Products US Norco Refinery Hydrocracker Unit (HCU) experienced unit upsets/outages which resulted in H2 flaring at the OL-5 flare system. OL-5 hydrogen is routed to HCU during normal operations, therefore H2 is flared	4	Shell Norco's third-party utility provider experienced upsets interrupting power supply to Equilon Norco Refinery and Shell Chemical LP units, resulting in upsets across the site, including HCU. The power outages on 8/20/22 and 9/4/22 were caused by wildlife intrusion, and the outage on 9/28/22 was due to a

	at OL-5 during HCU outages, as permitted in Olefins Title V Permit 2520-V10. Each OL-5 RFI was the result of a power interruption to the HCU. On 7/22/22, HCU experienced an electrical fault on a charge pump. On 8/20/22, 9/4/2022 and 9/28/22, HCU experienced upsets due to third-party power outages.		failed shield wire. The third-party provider implemented corrective actions to prevent wildlife intrusion into sub-stations and inspected equipment including affected shield wires. The HCU upset on 7/22/22 was due to a 2nd stage charge pump trip caused by an electrical fault. The power module was sent to the manufacturer to prevent failure from reoccurring.
GO-1 Elevated Flare	Shell Energy and Chemicals Park Norco experienced multiple power supply interruptions due to third-party upsets in 2H 2022. This resulted in GO-1 unit upsets on 9/28/22 and 11/15/22.	2	Shell Norco's third-party utility provider experienced upsets interrupting power supply to Equilon Norco Refinery and Shell Chemical LP units, resulting in upsets across the site, including GO-1. The third-party provider implemented corrective actions to prevent wildlife intrusion into sub-stations and inspected equipment including affected shield wires.
West Ops Elevated Flare	No trends identified.	N/A	N/A

H. A summary of the following, per Covered Flare per Calendar Quarter

i. Instrument Downtime of Each Monitoring Instrument/Equipment for Paragraphs 23, 26, and 27 expressed as both an absolute number and a percentage of time that the Covered Flare is In Operation and Capable of Receiving Sweep, Supplemental, and/or Waste Gas.

Instrument Downtime of Each Monitoring Instrument/Equipment for Paragraphs 23, 26, & 27				
Covered Flare	**Equipment**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**
OL-5 Ground Flare	H2 Analyzer AI-1070	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	BTU AI-1073	July-Sept	6.37	0.29%
		Oct-Dec	14.20	0.64%
	Vent Gas Flow FT-1069	July-Sept	9.02	0.41%
		Oct-Dec	9.00	0.41%
	Steam Flow FT-1094	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Steam Flow FT-1071	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Steam Flow	July-Sept	0.00	0.00%
	FT-1072	Oct-Dec	0.00	0.00%

	In Operation and Capable of Receiving Waste Gas	2nd Half	4294.2	97.8%

Instrument Downtime of Each Monitoring Instrument/Equipment for Paragraphs 23, 26, & 27				
Covered Flare	**Equipment**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**
OL-5 Elevated Flare	H2 Analyzer AI-1124	July-Sept	4.13	0.19%
		Oct-Dec	21.20	0.96%
	BTU AI-1125	July-Sept	0.02	0.00%
		Oct-Dec	2.32	0.10%
	Vent Gas Flow FT-1126	July-Sept	0.00	0.00%
		Oct-Dec	2.57	0.12%
	Steam Flow FT-9351	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Steam Flow FT-9352	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Steam Flow FT-9353	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	In Operation and Capable of Receiving Waste Gas	2nd Half	154.1	3.5%

Instrument Downtime of Each Monitoring Instrument/Equipment for Paragraphs 23, 26, & 27				
Covered Flare	**Equipment**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**
GO-1 Elevated Flare	H2 Analyzer AI-2141	July-Sept	2.93	0.13%
		Oct-Dec	0.00	0.00%
	BTU AI-2142	July-Sept	0.60	0.03%
		Oct-Dec	0.02	0.00%
	Vent Gas Flow FT-2143	July-Sept	16.05	0.73%
		Oct-Dec	3.98	0.18%
	Steam Flow FT-2146	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Steam Flow FT-8804	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Natural Gas FT-2145	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00%
	Nitrogen	July-Sept	0.00	0.00%

	FT-8810	Oct-Dec	0.00	0.00%
	In Operation and Capable of Receiving Waste Gas	2nd Half	275.7	6.3%

Instrument Downtime of Each Monitoring Instrument/Equipment for Paragraphs 23, 26, & 27				
Covered Flare	**Equipment**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**
West Ops Elevated Flare	H2 Analyzer AI-2147	July-Sept	5.55	0.25%
		Oct-Dec	0.00	0.00
	BTU AI-2148	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00
	Vent Gas Flow FT-2149	July-Sept	9.83	0.45%
		Oct-Dec	0.27	0.00
	Steam Flow FT-2325A	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00
	Steam Flow FT-2325B	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00
	Steam Flow FT-2325C	July-Sept	0.00	0.00%
		Oct-Dec	0.00	0.00
	In Operation and Capable of Receiving Waste Gas	2nd Half	9.83	0.22%

ii. If the total number of hours of Instrument Downtime on any monitoring instrument/equipment required pursuant to Paragraphs 23 or 26 that exceeds 5% of the time in a Calendar Quarter that the Covered Flare affected by the Instrument Downtime is In Operation, an identification of the periods of downtime by date, time, cause (including Malfunction or maintenance), and if the cause is asserted to be a Malfunction, the corrective action taken.

No monitoring instruments/equipment exceeded 5% of the time in a Calendar Quarter for Instrument Downtime.

iii. The total number of hours expressed as both an absolute number of hours and a total percentage of time that the Covered Flare was In Operation in which the requirements of Paragraphs 58-59 were not applicable because the only gas or gases being vented were pilot gas or purge gas.

Time that Covered Flare was In Operation in which Paragraphs 58-59 were not applicable:		
Covered Flare	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**
OL-5 Ground Flare	97.85	2.23%
OL-5 Elevated Flare	4237.9	96.5%
GO-1 Elevated Flare	4116.3	93.7%
West Ops Elevated Flare	4382.2	99.8%

iv. The total number of hours expressed as both an absolute number of hours and a percentage of time the Covered Flare was In Operation, of exceedances of the emissions standards in Paragraphs 58-59; provided, however, that if the exceedances of these standards was less than 5% of the time in a Calendar Quarter and was due to one or more of the exceptions set forth in Paragraph 60, the report must so note.

Exceedances of the Emissions Standards in Paragraphs 58-59					
Covered Flare	**Standard & Reference**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**	**Notes on Exceedances**
OL-5 Ground Flare	NHVvg > 300 Btu/scf (P 58.a)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-
	NHVcz > 470 (P 58.c)	July-Sept	1.5	0.07%	A third-party power supply interruption on the 9/3/2022 caused intermittent flaring from multiple site locations.
		Oct-Dec	0.0	0.0%	-

Exceedances of the Emissions Standards in Paragraphs 58-59					
Covered Flare	**Standard & Reference**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**	**Notes on Exceedances**
OL-5 Elevated Flare	NHVvg > 300 Btu/scf (P 58.a)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-
	NHVcz > 270 (P 58.b)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-

Exceedances of the Emissions Standards in Paragraphs 58-59					
Covered Flare	**Standard & Reference**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**	**Notes on Exceedances**
GO-1 Elevated Flare	NHVvg > 300 Btu/scf (P 58.a)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-
	NHVcz > 270 (P 58.b)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-

Exceedances of the Emissions Standards in Paragraphs 58-59					
Covered Flare	**Standard & Reference**	**Quarter**	**Absolute Number of Hours (hrs)**	**Total Percentage of Time (%)**	**Notes on Exceedances**
West Ops Elevated Flare	NHVvg > 300 Btu/scf (P 58.a)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-
	NHVcz > 270 (P 58.b)	July-Sept	0.0	0.0%	-
		Oct-Dec	0.0	0.0%	-

v. **If the exceedance of the emissions standards in Paragraphs 58-59 was not due to one of the exceptions in Paragraph 60 (Standard During Instrument Downtime), or if the exceedance was due to one or more of the exceptions in Paragraph 60 and the total number of hours caused by the exceptions exceeds 5% of the time in a Calendar Quarter that the Covered Flare affected by the Instrument Downtime was In Operation, an identification of each block period that exceeded the standard, by time and date; the cause of the exceedance (including Startup, Shutdown, maintenance, or Malfunction), and if the cause is asserted to be a Malfunction, an explanation of any corrective actions taken.**

The OL-5 Ground Flare experienced deviations of the Net Heating Value of Combustion Zone Gas (NHV_{cz}) limit on 9/4/2022 as determined on a Fifteen-Minute Block Average under Paragraph 55.c.

Date	# of 15-Minute Blocks	Cause & Corrective Action(s)
9/4/2022	6	Shell Norco's third-party utility provided experienced an upset on the night of 9/3/2022 causing mutliple unit upsets and intermittent flaring from multiple locations. The power outage was caused by wildlife intrusion into a sub-station. During the flaring event, Operations increased the steam ratio controller (PFC9560) from its normal position to combat potential smoking scenarios. This controller increased the amount of steam supplied to the flare, resulting in low NHVcz for six 15-min block periods. The steam ratio controller was returned to its normal operating range, which increased NHVcz above compliance limits. The primary corrective action made by the utility provider and Shell was to implement measures to prevent wildlife intrusion into the sub-station. A secondary corrective action being pursued by Shell is to increase the

		maximum flow range for the supplemental gas supplied to the OL-5 Flare System from 5000 lb/hr to 8000 lb/hr to avoid periods of low NHVcz. Estimated time for equipment purchase and implementation is Q2 2023. Refresher training has also been provided to OL-5 Operations to better understand steam and supplemental gas controls as it applies to Consent Decree compliance.

vi.

vi. Sufficient information to document compliance with the FGRS Compressor availability requirements of Paragraph 46. For any period of non-compliance, Defendant must identify the date, cause, and corrective action taken.

There were no periods of FGRS Availability less than 98% in the second half of 2022.

vii. Any additional matters believed should be brought to the attention of EPA or LDEQ.

None.

Consent Decree Semi-Annual Report
Section IX. Reporting Requirements
Paragraph 73

Annual Emissions Data

Annual Emissions Data for Calendar Year 2022 will be provided in the first half of 2023 semi-annual report.

Consent Decree Semi-Annual Report
Section IX. Reporting Requirements
Paragraph 74

Review of Non-Compliances

The OL-5 Ground Flare experienced deviations of the Net Heating Value of Combustion Zone Gas (NHV_{cz}) limit on 9/4/2022 as determined on a Fifteen-Minute Block Average under Paragraph 55.c.

Date	# of 15-Minute Blocks	Cause & Corrective Action(s)
9/4/2022	6	Shell Norco's third-party utility provided experienced an upset on the night of 9/3/2022 causing mutliple unit upsets and intermittent flaring from multiple locations. The power outage was caused by wildlife intrusion into the third-party sub-station. During the flaring event, Operations increased the steam ratio controller (PFC9560) from its normal position to combat potential smoking scenarios. This controller increased the amount of steam supplied to the flare, resulting in low NHVcz for six 15-min block periods. The steam ratio controller was returned to its normal operating range, which increased NHVcz above compliance limits. The primary corrective action made by the utility provider and Shell was to implement measures to prevent wildlife intrusion into the sub-station. A secondary corrective action being pursued by Shell is to increase the maximum flow range for the supplemental gas supplied to the OL-5 Flare System from 5000 lb/hr to 8000 lb/hr to avoid periods of low NHVcz. Estimated time for equipment purchase and implementation is Q2 2023. Refresher training has also been provided to OL-5 Operations to better understand steam and supplemental gas controls as it applies to Consent Decree compliance.

Consent Decree Semi-Annual Report
Attachment 1 – Benzene Fenceline Monitoring

Attachment 1a: Benzene Fenceline Monitoring

Sample Period	6/23/2022	7/7/2022	7/20/2022	8/3/2022	8/17/2022	8/31/2022	9/14/2022	9/28/2022	10/12/2022	10/26/2022	11/9/2022	11/23/2022	12/7/2022	12/21/2022
	7/7/2022	7/20/2022	8/3/2022	8/17/2022	8/31/2022	9/14/2022	9/28/2022	10/12/2022	10/26/2022	11/9/2022	11/23/2022	12/7/2022	12/21/2022	1/4/2023
Average Temperaure (°F)	81.64	83.90	82.23	82.23	81.73	80.35	82.16	73.14	69.87	70.38	55.06	66.18	61.37	50.26
Average Pressure (mm Hg)	762.75	761.51	763.30	762.42	761.00	760.53	761.65	764.12	762.48	763.32	766.65	763.96	764.21	767.09
Prevailing Wind Direction	SSE	SW	S	SSE	SE	SSW	N	NNE	S	SSE	NNE	SSE	SE	SE
B-01	0.46	0.72	0.64	0.37	0.60	0.47	0.41	0.29	0.78	0.49	0.38	1.30	0.81	0.95
B-02	0.68	2.50	1.40	0.57	0.62	0.57	0.47	0.35	0.66	0.56	0.38	0.96	0.50	0.67
B-03	2.00	4.80	2.50	1.50	2.30	1.40	1.10	0.68	1.00	0.80	0.65	1.30	0.85	1.10
B-05	2.60	2.50	2.30	1.80	17.00	19.00	10.00	9.50	4.70	2.00	4.00	2.30	2.80	2.80
B-06	0.86	0.99	0.72	1.10	1.80	1.90	1.20	0.86	0.86	0.87	0.67	1.10	0.71	0.89
B-07	0.72	1.00	0.67	0.86	1.50	1.90	0.97	0.97	0.99	0.84	0.87	0.70	0.81	1.00
B-09	1.80	4.90	2.00	1.60	2.30	1.50	1.30	1.10	1.70	1.40	0.96	2.20	2.20	2.20
B-11	4.50	4.30	3.30	3.60	7.80	4.60	3.20	3.10	2.70	3.20	2.70	2.10	2.50	1.90
B-12	0.88	0.62	0.68	0.71	0.72	1.20	1.30	1.80	1.20	1.10	1.70	1.20	0.74	0.75
B-13	1.40	0.85	3.60	0.87	2.10	1.80	5.60	5.40	2.30	2.80	3.90	2.50	3.70	1.30
B-14	1.50	0.79	2.70	1.15	1.75	2.10	3.90	2.30	1.60	2.40	4.15	2.95	1.65	1.15
B-15	2.60	2.00	4.90	3.50	3.90	2.50	4.70	2.40	4.00	3.00	4.80	4.60	2.80	2.70
B-16	1.30	1.10	1.70	1.40	2.10	2.50	3.80	2.00	1.70	1.90	2.10	2.90	1.70	1.40
B-17	1.40	0.99	1.40	1.20	3.50	3.00	4.50	2.10	1.80	2.10	1.90	1.50	1.70	1.20
B-18	1.90	1.20	2.50	2.60	5.80	2.90	5.70	2.70	3.10	3.40	2.00	2.20	2.00	1.80
B-19	1.50	1.10	2.20	2.30	4.60	2.10	3.80	1.50	2.60	2.80	1.20	1.40	1.60	1.80
B-20	0.44	0.65	0.77	0.69	1.00	0.54	0.45	0.31	0.89	0.75	0.36	0.68	0.83	1.50
C-08	1.60	2.20	1.60	2.00	2.40	1.90	1.50	1.40	2.60	2.10	0.92	1.50	1.30	2.40
C-10	1.80	2.70	1.80	1.60	2.10	2.10	1.90	2.30	2.80	2.30	1.80	1.50	1.40	1.50
WB-01	2.80	3.00	4.00	3.90	7.10	9.00	3.90	0.92	4.00	1.90	0.61	3.30	1.40	1.50
WB-02	2.30	0.95	0.72	0.85	1.20	6.80	3.30	0.57	0.74	1.10	0.68	1.00	0.66	0.63
WB-03	0.97	0.54	0.62	0.65	2.40	7.70	2.90	1.10	1.30	1.00	1.20	0.95	0.78	0.77
WB-04	0.82	0.47	0.61	0.62	1.20	4.30	2.50	1.10	0.85	0.99	1.20	1.10	0.75	0.62
WB-05	0.65	0.41	0.49	0.60	0.82	2.60	1.70	0.89	0.76	0.96	1.00	0.99	0.65	0.63
WB-06	0.58	0.40	0.48	0.51	0.71	1.80	1.30	0.83	0.70	0.91	0.90	0.94	0.63	0.56
WB-07	0.52	0.40	0.50	0.49	0.60	1.40	1.30	0.84	0.62	0.94	0.77	0.77	0.61	0.50
WB-08	0.45	0.37	0.43	0.43	0.51	0.72	0.89	0.48	0.51	0.80	0.68	0.89	0.57	0.50
WB-09	0.49	0.37	0.56	0.45	0.59	0.80	0.96	0.48	0.56	0.77	0.71	0.83	0.59	0.54
WB-10	0.49	0.38	0.43	0.45	0.64	0.89	0.99	0.40	0.55	0.74	0.58	0.77	0.58	0.56
WB-11	0.62	0.44	0.56	0.60	0.85	0.94	1.00	0.44	0.60	0.85	0.72	0.88	0.94	0.78
WB-12	1.00	0.77	1.10	1.40	1.70	1.40	1.30	0.55	2.10	1.20	0.56	1.50	0.87	0.82
SN-BERTH-1	1.20	1.50	3.30	2.30	2.00	1.70	3.20	3.20	3.10	2.30	2.40	5.20	2.60	2.30
SN-BERTH-2	0.84	0.85	1.50	1.00	0.85	2.00	2.00	2.00	1.50	1.80	2.50	2.70	1.30	0.85
SN-BERTH-4	0.74	0.52	0.61	0.58	0.63	1.04	1.15	1.08	0.99	1.25	1.20	1.15	1.35	0.76
Minimum	0.44	0.37	0.43	0.37	0.51	0.47	0.41	0.29	0.51	0.49	0.36	0.68	0.50	0.50
Maximum	4.50	4.90	4.90	3.90	17.00	19.00	10.00	9.50	4.70	3.40	4.80	5.20	3.70	2.80
Period Delta C	4	5	4	4	16	19	10	9	4	3	4	5	3	2
Annual Rolling Average (Rolling Delta C)	16	16	15	15	15	16	16	16	16	15	15	15	15	14
Notes:														

Summary of Root Cause Analyses and Corrective Actions for Benzene Fenceline Monitoring Program – 2H 2022 Paragraph 19 (Appendix 1.8)					
Sample Period Start	**Sample Period End**	**Period Delta C**	**Root cause(s)**	**Corrective action(s)**	**Anticipated emissions reductions (TPY)**
8/17/22	8/31/22	16	On August 20, 2022, Norco Refinery's Hydrocracking Unit (HCU) experienced a power dip caused by a third-party provider resulting in the trip of the unit's 2nd Stage Charge Pump's (P-1940) variable frequency drive (VFD). This caused the loss of feed to the 2nd Stage section resulting in a unit shutdown until the pump could be restarted. The shutdown and reduced rates at other refining units caused an increase in off-spec material flow to Tank A-414. The off-spec rundown was at a higher-than-normal temperature which caused elevated emissions near the affected monitoring points. During the HCU upset conditions, sour water flow from HCU was also elevated due to the HCU recycle water pumps being out of service from seal failures. While HCU was producing more sour water flow, which is routed to the DU-4 sour water drum, the DU-4 sour water drum level transmitter malfunctioned. This caused sour water to overflow to the off-spec header system instead of the slop system. The off-spec rundown was at a higher-than-normal temperature which caused elevated emissions near the affected monitoring points. In addition to the impacts described in the B-05 section above, Tank A-415, an external floating roof tank storing crude oil, began planned turnaround maintenance activities in mid-August. The turnaround activities included draining the material from the tank; circulating a portion of the crude to break up the solid sludge layer that remained on the bottom of the tank; introducing nitrogen to create an inert atmosphere; and subsequent tank degassing utilizing a thermal oxidizer for emissions control. The tank roof was landed on August 18, 2022, to complete the de-inventorying phase and begin the sludge circulation. It is believed that this resulted in the elevated emissions near the compliance monitor R-04.	HCU 2nd Stage was restarted following power dip Return the HCU recycle water pumps to service	0.002
8/31/22	9/14/22	19	On September 3, 2022, the site experienced a loss of energy from a third-party supplier resulting in an unplanned shutdown of the DU-5 Unit and the Coker Unit. The shutdown of DU-5 Unit led to the routing of off-spec rundown material to the crude tanks, A-412 and A-414. The off-spec material was at an elevated temperature which resulted in impacts to the affected monitoring points. Through investigation it was	Make repairs to the damaged cable and perform equipment testing on the transformer prior to startup Remove all equipment near the substation fencing that could provide access to the substation by wildlife	0.002

Summary of Root Cause Analyses and Corrective Actions for Benzene Fenceline Monitoring Program – 2H 2022 Paragraph 19 (Appendix 1.8)					
Sample Period Start	**Sample Period End**	**Period Delta C**	**Root cause(s)**	**Corrective action(s)**	**Anticipated emissions reductions (TPY)**
			determined that a racoon was able to gain entry into the Norco Substation that provides power to these units.	DU5 Unit was restarted following loss of energy	
9/14/22	9/28/22	10	On September 28, 2022, the HCU, Sulfur Plants and the GO-1 Unit were impacted by a regional power failure caused by a third-party electrical supplier resulting in subsequent unit upsets and shutdowns. The HCU shutdown as well as the reduced rates at other refining units caused an unexpected increase in off-spec material flow to Tank A-414. The off-spec rundown was at a higher-than-normal temperature which caused elevated emissions near the affected monitoring point. As a result of the shutdown described in 8/17/22 period above, the HCU second stage coalescer level dropped below target causing a level indicator to erroneously show a "bad" level reading. The "bad" level triggered a valve to the sour water system/drum to its failed position (open) and the valve to the HCU second stage main fractionator to its failed position (closed). As feed was introduced to the HCU during restart, hot hydrocarbons were sent to the sour water system/drum through the open valve on the HCU second stage coalescer. The hot hydrocarbons overwhelmed the sour water system/drum and were routed to the off-spec header thus contributing to the increase in off-spec material flow and temperature to Tank A-414.	3rd party utility supplier inspected their equipment trips, made repairs, cleared the failed shield wire and restored normal electrical power to the site HCU was restarted following power dip Review tank integrity inspection reports for deficiencies Deploy additional eGC monitor near Fenceline monitor B-05 Utilize monitoring devices for VOC and Benzene detection Perform 3rd party mobile air monitoring near affected Fenceline monitors, B-05 and R-04	0.001
9/28/22	10/12/22	9	The root causes identified in the 9/14/22 – 9/28/22 period were found to be the same root cause for this period as well as impacts described in the section above during the September 28 power loss.	Perform additional LDAR monitoring for leaking fugitive components	N/A

Consent Decree Semi-Annual Report
Attachment 2 – Summary of Reportable Flaring Incidents for OL-5 Ground and Elevated Flare System

Summary of Internal Flaring Incident Reports and Root Cause Analyses for OL-5 Ground and Elevated Flare System – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
7/23/22 0:00	7/23/22 21:00	21	21	0.02	On 7/22/22, the Equilon Enterprises LLC dba Shell Oil Products US Norco Refinery HCU 2nd stage experienced an upset. H2 from OL-5 was unable to be sent to HCU and was sent to the OL-5 Flare system, as permitted.	No corrective actions required by Shell Chemical LP as the H2 flaring is permitted at the OL-5 flare system.	N/A
7/25/22 23:00	7/26/22 19:00	20	8.2	0.03	On 7/25/22, OL-5 Operations swapped the Flare Gas Recovery online compressor from K-5020 to K-5021. Following the swap, it was recognized that K-5021 was only recovering a portion of the flare gas. The suction block valve upstream of K-5021 was partially open, allowing only a portion of the flare gas to be recovered.	The suction block valve was opened fully. Procedural updates for start-up of K-5020/K-5021 to ensure suction block valves are verified	N/A
8/20/2022 22:00	8/22/2022 20:00	46	77.72	0.07	On 8/20/22, the Equilon Enterprises LLC dba Shell Oil Products US Norco Refinery HCU experienced an upset from a power dip. A power dip tripped the VFD for P1940 in the Refinery HCU, leading to the HCU outage and subsequent H2 flaring. OL-5 is permitted to flare H2 in Title V Operating Permit 2520-V10. H2 is also defined as a non-recoverable gas in the Consent Decree.	No corrective actions required by Shell Chemical LP as the H2 flaring is permitted at the OL-5 flare system.	N/A
9/4/2022 0:00	9/5/2022 10:00	34	1,352	0.93	On 9/3/22, Shell Chemical LP experienced a power dip and flared H2 and propylene at the OL-5 Ground Flare and OL-5 Elevated Flare. The power dip was the result of a short circuit on the third-party utility provider's 13.8kV electrical feeder. Wildlife gained entry to the electrical substation and created the short circuit.	No corrective actions required by Shell Chemical LP as this was the result of a third-party utility provider outage.	N/A

Summary of Internal Flaring Incident Reports and Root Cause Analyses for OL-5 Ground and Elevated Flare System – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
9/28/2022 12:00	10/1/2022 8:00	68	4,015	40.15	On 9/28/22, Shell Chemical LP and Equilon Enterprises LLC dba Shell Oil Products US Norco Refinery experienced an upset from a third-party power dip. This resulted in a trip of the VFD for P1940 in the Refinery HCU, leading to the HCU outage and subsequent H2 flaring. OL-5 is permitted to flare H2 in Title V Operating Permit 2520-V10. H2 is also defined as a non-recoverable gas in the Consent Decree.	No corrective actions required by Shell Chemical LP as this was the result of a third-party utility provider outage.	N/A
10/18/2022 17:00	10/26/2022 6:00	181	3,435	0	On 10/18/2022, the Equilon Enterprise RCCU experienced a catalyst leak that caused an immediate outage of RCCU, resulting in flaring of butadiene heavy ends (BDHE) to the OL-5 Ground Flare.	N/A – Shell Chemical LP does not own or operate the Equilon RCCU. However, Equilon repaired the catalyst leak and returned RCCU to operation.	N/A
11/7/2022 20:00	11/13/2022 0:00	124	3,252	0	On 11/7/22, OL-5 flared H2 from the OL-5 product methanator and tail gas from OL-5 demethanizer, which both contributed to the elevated flow at the OL-5 flare system. It was determined that the control valve, PC-5272B, failed from vibration. The failure was the valve plug separating from the valve stem. The valve plug was closed despite being commanded opened. This caused gas pressure build up and loss of flow leading to the product methanator trip and flaring of H2 and tail gas.	PC-5272B was repaired and modified to increase reliability.	N/A
11/14/2022 8:00	11/16/2022 2:00	42	2.97	0	On 11/14/22, OL-5 Operations performed planned maintenance on the C2 Splitter reflux system resulting in brief venting to the OL-5 flare system.	No corrective actions required by Shell Chemical LP as this was permitted flaring.	N/A

Summary of Internal Flaring Incident Reports and Root Cause Analyses for OL-5 Ground and Elevated Flare System – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
11/19/2022 4:00	11/19/2022 17:00	13	2.14	0	On 11/19/22, the 3rd generation ethane line Knock Out (KO) pot was installed. The new KO pot and piping were isolated prior to commissioning and purged to the flare with ethane to displace the nitrogen from the system upon start-up. Miscellaneous maintenance venting to the OL-5 flare system is a permitted activity per Title V permit 2520-V10.	No corrective actions required by Shell Chemical LP as this was permitted flaring.	N/A
11/26/22 16:00	11/28/22 17:00	36	667	0	On November 26, 2022, Shell Chemical LP Boiler 10 tripped during a severe rain-storm, resulting in a drop in steam header pressure across the site. The Shell Chemical BD-5 unit was shutdown in response to the steam load shed, and the OL-5 unit experienced upset flaring from multiple coldside vent sources. The subsequent startup of BD-5 occurred on 12/5/2022, which is also included in this Root Cause Analysis as it is related to the initial boiler trip and subsequent recovery. The boiler trip stemmed from a mechanical failure associated with trip and throttle valve DB-5484.	Temporarily operate Boiler 10 at increased rates to mitigate trip potential until new valve is installed. Replaced the existing valve, DB-5484.	N/A
12/5/22 13:00	12/6/22 11:00	22					
12/23/2022 8:00	12/24/2022 14:00	30	301	0	On December 23, 2022, freezing ambient temperatures caused the level transmitters on the Secondary Depropanizer to malfunction. The liquid level was dropped three times in order to restabilize the column.	Unfroze impulse lines with steam lance and added insulation to impulse lines.	N/A
12/30/2022 20:00	1/1/2023 0:00	28	8.15	0	On December 30, 2022, a high level in the Ethylene Refrigeration Compressor (ERC) mid-level suction drum caused a trip. The high level was caused by false readings from level control valve LC-7230 due to loss of communication	LC-7230 communication wire connections were repaired, and communication was restored.	N/A

Summary of Internal Flaring Incident Reports and Root Cause Analyses for OL-5 Ground and Elevated Flare System – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
					from loose wire connections. This also led to a Product Methanator trip.		

Consent Decree Semi-Annual Report
Attachment 3 – Summary of Reportable Flaring Incidents for GO-1 Elevated Flare

Summary of Internal Flaring Incident Reports and Root Cause Analyses for GO-1 Elevated Flare – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
7/22/22 15:00	7/23/22 21:00	30	3,101	28	On 7/22/2022 the valve supplying propylene refrigerant (PR) vapor to the GO-1S Demethanizer reboiler (PCV7787) failed closed due to loss of output signal. The valve positioner on PCV7787 failed and communication cable lost output signal to DCS resulting in control valve failing to the closed position. This led to flaring from multiple vents in GO-1S and OP-1.	The valve positioner on PCV7787 was replaced	N/A
9/18/22 16:00	9/19/22 23:00	31	413	27	On 9/18/2022, the Shell Chemical LP GO-1 unit performed planned maintenance on the dry gas arsine absorber vessel, PV-1040. The arsine beds were purged to the GO-1 Elevated Flare as well as routine vents from the GO-1 unit. This is a permitted activity in Title V permit 2520-V10.	No corrective actions required by Shell Chemical LP as Arsine Bed purging to the GO-1 flare system is permitted.	N/A
9/28/22 23:00	9/30/22 04:00	29	1,422	0	On 9/28/2022, Shell Chemical LP experienced a power dip which resulted in a GO-1 Unit upset. GO-1 Process Swing Absorber (PSA) tail gas, H2, and treated dry gas was vented to the GO-1 Elevated Flare. The power dip was the result of the third-party utility provider's 230kV and 500kV electrical line tripping from electrical faults. The fault was caused by a failed shield wire causing line and ground faults.	No corrective actions required by Shell Chemical LP as this was the result of a third-party utility provider outage.	N/A
10/18/2022 15:00	10/20/2022 19:00	52	5,663	21	On 10/18/2022 the Equilon Enterprise Residual Catalyst Cracking Unit (RCCU) experienced a catalyst leak that caused an immediate outage of RCCU.	No corrective actions required by Shell Chemical LP as RCCU and third-party dry gas to the GO-1 flare system is permitted. However,	N/A

Summary of Internal Flaring Incident Reports and Root Cause Analyses for GO-1 Elevated Flare – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
10/24/2022 17:00	10/25/2022 22:00	29			The loss of RCCU dry gas, which is taken by the GO-1 operating unit as feed initiated a proactive maintenance outage of the GO-1 Dry Gas Compressor (DGC). Flaring the remaining feed gas (third-party dry gas) is a permitted vent stream within the Olefins Title V Air Permit 2520-V10, and all operational procedures were followed to minimize flaring to the extent feasible.	Equilon repaired the catalyst leak and returned RCCU to operation.	
11/15/2022 21:00	11/19/2022 10:00	85	12,292	292	On 11/15/22, a third-party substation of power supply to GO1N/S and OP1 was damaged at about 8:42 pm due to intrusion by a raccoon. The loss of power supply caused shutdown of production in the Shell Chemical LP GO1 and OP1 units, resulting in flaring of various streams to GO-1 Elevated Flare (EF) and Equilon Enterprise Norco Refinery West Ops Ground Flare (WOGF). The restart process on 11/16/2022 also resulted in flaring of various streams and liquid dropout to GO-1 EF and WOGF. Following a period of normal operations, the third-party utility provider made necessary repairs on 12/8/2022 to electrical equipment stemming from the 11/15/2022 loss of power. This resulted in additional flaring from GO-1 due to a necessary partial shutdown.	No corrective actions required by Shell Chemical LP as this was the result of a third-party utility provider outage.	N/A
12/8/2022 1:00	12/9/2022 0:00	23					

Summary of Internal Flaring Incident Reports and Root Cause Analyses for GO-1 Elevated Flare – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
11/27/2022 6:00	11/27/2022 21:00	15	1	0	On November 26, 2022, Shell Chemical LP Boiler 10 tripped during a severe rain-storm, resulting in a drop in steam header pressure across the site. Equilon Enterprises LLC dba Shell Oil Products US – Norco Refinery's (Shell) RCCU unit experienced an operational upset that stemmed from the boiler trip in the Utilities Production Area. The upset resulted in flaring of untreated RCCU dry gas at the GO-1 Elevated Flare.	Temporarily operate Boiler 10 at increased rates to mitigate trip potential until new valve is installed. Replaced the existing valve, DB-5484.	N/A

Consent Decree Semi-Annual Report
Attachment 4 – Summary of Reportable Flaring Incidents for West Ops Elevated Flare

Summary of Internal Flaring Incident Reports and Root Cause Analyses for West Ops Elevated Flare – 2H 2022 Paragraph 42							
RFI Start Date	**RFI End Date**	**Duration (hrs)**	**VOCs Emitted (lbs)**	**HAPs Emitted (lbs)**	**Root cause(s)**	**Corrective action(s) completed**	**Corrective action(s) outstanding**
11/2/2022 17:00	11/4/2022 02:00	33	3,093	89.25	On 11/2/2022, Utilities performed a test and routed the oily water separator (OWS) flare header (XC-430 and XC-409) to the West Ops Elevated Flare. Routine vent streams from the Equilon Enterprises Alkylation Unit and Logistics loading vents were also routed to WOEF during this period.	N/A - Shell Chemical LP is permitted to flare CUS vents during permitted maintenance activity and routine venting.	N/A