



Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	09/12/2022 to 09/16/2022	
Media Program:	Air	
Regulatory Program(s)	Title V, NESHAP	
Company Name:	TotalEnergies Petrochemicals & Refining USA, Inc.	
Facility Name:	Port Arthur Refinery	
Facility Physical Location:	7600 32nd Street	
(city, state, zip code)	Port Arthur, TX 77642	
Mailing address:	PO BOX 849	
(city, state, zip code)	Port Arthur, TX 77641	
County/Parish:	Jefferson County	
Facility Phone Number	409-963-6611	
Facility Contact:	Isaac Bankole	Environmental Superintendent
	isaac.bankole@totalenergies.com	
FRS Number:	110000755200	
Identification/Permit Number:	RN102457520	
Media Identifier Number:	AFS 48-245-00037	
NAICS:	324110	
SIC:	2911	
Personnel participating in inspection:		
Sarah Frey	EPA Region 6, ECD-AT	Inspector
Nicholas Bobbs	EPA OECA, AED	Inspector
Jeanette Morrell	TCEQ, Region 10	Environmental Investigator
Michael Miller	TCEQ, OCE	Air Program Liaison
Alexia Scott	ERG	Investigator
Elizabeth Hubbard	ERG	Investigator
Isaac Bankole	TotalEnergies	Environmental Superintendent
Carl Boyd	TotalEnergies	OM&S Supervisor
Amy Geist	TotalEnergies	Corporate Environmental Manager
Connie Howard	TotalEnergies	Environmental Staff
Meredith Youngson	TotalEnergies	Environmental Staff
Anthony McLaughlin	TotalEnergies	Environmental Staff
Trisha Froemming	TotalEnergies	Environmental Staff
EPA Lead Inspector Signature/Date	<i>Sarah Frey</i> Sarah Frey	1/6/2023 Date
Supervisor Signature/Date	 James Leathers	 Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

EPA Region 6 inspector Dr. Sarah Frey and EPA OECA-AED inspector Mr. Nicholas Bobbs arrived at the TotalEnergies Petrochemicals & Refining USA, Inc. (“Total”) Port Arthur Refinery (the “Facility” or “refinery”) at 8:15 am on September 12, 2022 for an announced inspection. They were accompanied by Ms. Jeanette Morrel and Mr. Michael Miller from the Texas Commission on Environmental Quality (“TCEQ”) and Ms. Alexia Scott and Ms. Elizabeth Hubbard from the Eastern Research Group (“ERG”), contractors for the EPA. We met with Mr. Hugh Campbell/HSSE Manager, Mr. Tom Chavez/General Manager, Mr. Isaac Bankole/Environmental Superintendent, Ms. Amy Geist/Corporate Environmental Manager, and other facility representatives at the Opening Conference. We presented our credentials to Mr. Chavez and Mr. Campbell and informed them that this was an EPA inspection to determine compliance with the facility’s Title V Air Permit and the Clean Air Act (“CAA”). The scope of the inspection is a partial compliance evaluation (“PCE”) and includes evaluation of the compliance of the facility with its Title V operating permit and the applicable CAA regulations, focusing particularly on the National Emissions Standards for Hazardous Air Pollutants (“NESHAP”) Subpart CC Fenceline Monitoring regulations (40 CFR 63.658). The inspection was prompted by the Facility’s reported benzene fenceline monitoring concentrations, in which the 12-month rolling average exceeded the action level of 9 µg/m³ for at least 13 consecutive calendar quarters. Photographs and videos taken during the inspection can be found in Appendix 1 and 2, respectively. The sign-in sheet for the Opening Conference is attached as Appendix 3.

FACILITY DESCRIPTION

Total operates under Federal Operating Permit (FOP) O-1267, issued on August 13, 2010, under New Source Review (NSR) Permit 46396, last revised on October 24, 2022. The refinery also operates under several Permit By Rules. The refinery receives crude oil and condensate via pipeline and marine vessel. The crude is first split into various petroleum fractions via distillation. The refinery manufactures transportation fuels: gasoline, diesel, jet fuel, propane, butane, and bunker oil. The refinery also makes asphalt and recovers benzene, toluene, and xylene from its fuel products.

Total is subject to 40 CFR part 63 subpart CC, which requires all refineries to implement a fenceline monitoring program for benzene emissions. The regulatory requirements of the program can be found in 40 CFR 63.658 and the reporting requirement can be found in 40 CFR 63.655(h)(8). Fenceline monitoring is required to be performed in accordance with Methods 325A and 325B of 40 CFR part 63 Appendix A.

To meet the requirements for benzene fenceline monitoring in 40 CFR 63.658, the Facility installed 23 passive sampling sites for biweekly analysis of benzene concentrations. The Facility also installed 22 temporary sampling sites for weekly analysis of benzene concentrations. Additionally, four real-time fenceline gas chromatograph analyzers were installed around May 2021 to collect benzene concentrations every 10 minutes.

Section II - OBSERVATIONS

On September 12, 2022, after credentials and identification were presented to the responsible officials, the inspection team discussed our plans for the inspection, including the intent to deploy real-time benzene analyzers to investigate potential sources of benzene impacting the Facility's fenceline. Details about the ENMET environmental Gas Chromatographs ("eGCs") used and the resulting data can be found in Appendix 4. EPA and TCEQ also shared that we would conduct screenings using optical gas imaging ("OGI") cameras and photoionization detectors ("PID"). After discussions about safety, scheduling, photographs, videos, and confidential business information ("CBI"), we discussed the status of the records requested on August 25, 2022 (Appendix 5, Document Request).

The inspection team began a review of the requested sampling data and Ms. Connie Howard described the Facility's Benzene Taskforce Root Cause Analysis team, which meets every two weeks to discuss sampling results and action items. Ms. Howard shared that the 22 temporary monitors are collected weekly, but the results are reviewed on a biweekly basis. Mr. Carl Boyd described past and current issues with the nitrogen gas regulator on Tank 926, which was having an impact on the associated thermal oxidizer. [AOC 10] Facility representatives described how they used data from their real-time analyzers, utilizing email and text alerts to potentially trigger further investigations using handheld monitors that have a lower detection limit of 10 parts per billion ("ppb") benzene. EPA requested additional documents and departed the conference room to set up the EPA eGC near tanks 807 and 808.

At approximately 11:30am, the inspection team observed one of Total's real-time analyzers, passive sampler site PA-6.5, and the temporary thermal oxidizer. ERG assembled EPA's real-time analyzer, an ENMET eGC labeled "eGC EPA 2", and placed it near Tanks 810 and 808. After breaking for lunch, the inspection team broke into two groups. Inspector Bobbs was accompanied by ERG in the field, and Inspector Frey was accompanied by TCEQ in the conference room. Discussions related to exceedance events and corrective action plans continued with Mr. Bankole, Ms. Howard, and Ms. Trisha Froemming (see Section II-a). Mr. Bobbs adjusted the location of "eGC EPA 2" to be slightly closer to Tanks 809 and 810 and surveyed the benzene transfer pumps for tanks 809 and 810. The inspection team departed the facility at 5:00 pm.

On September 13, 2022, the inspection team arrived at 8:05 am. The team reviewed eGC data collected from both Total and EPA's analyzers overnight. Inspector Bobbs and ERG returned to the field to relocate eGC EPA 2 to the west/southwest of Tank 807 and to assemble "eGC EPA 1", initially placed south of Dock 3A. Inspector Frey and TCEQ remained in the conference room to further discuss evaluation of fenceline data, exceedance events, and corrective action plans (see Section II-a). After breaking for lunch, the inspection team returned to the field at 3:15pm. Dr. Frey, Mr. Miller, and Ms. Morrell were accompanied by Mr. Bankole, Ms. Howard, Ms. Froemming, and Ms. Youngson of Total to observe the Crude Unit heat exchangers and the cooling towers. Mr. Bobbs, Ms. Scott, and Ms. Hubbard were accompanied by Mr. Boyd, Ms. Geist, and other Total personnel to survey the benzene transfer pump 22P-809, benzene sales pump 22P-807 and the offspec pygas pump 22P-807. Mr. Bobbs observed

that the seal pressure gauge for pump 22P-809A was pegged at the maximum of 100 psi. Mr. Boyd said that this was due to a faulty gauge. [AOC 10] The inspection team departed the facility around 5:30pm.

On September 14, 2022 the inspection team arrived at 8:15 am. Dr. Frey reviewed cooling tower emission monitoring records. The team reviewed eGC data collected from both Total and EPA's analyzers overnight. The eGC EPA 1 was positioned to the south-southwest of Dock 3A overnight and there was a light wind coming from the north and north-northeast. The refinery was loading a barge at Dock 3A with benzene product from Tank 808 during this period. Mr. Bobbs requested the log for the barge loading on September 13 to 14 and used it to determine probable causes of benzene concentrations detected by eGC EPA 1. The eGC EPA 1 detected significant benzene concentrations between 2:26pm and 6:55 pm on September 13, 2022. There was a high reading of 60.8 ppb at 4:56 pm, was immediately before the transfer hose was connected to the barge. The barge disconnected from the transfer hose at 6:10 pm after being refused loading due to high pressure in the barge. There was a high reading of 48.92 ppb at 6:26 pm, which is when the barge left from dock 3A. The barge returned and started transferring benzene product overnight. The eGC EPA 1 detected significant benzene concentrations from 6:36 am to 8:36 am. The highest readings during this window were 195 ppb at 6:56 am and 173.8 ppb at 7:46 am. These readings occurred while the barge had finished receiving product and the transfer hose had been disconnected, but the barge was still at Dock 3A. [AOC 1] The eGC EPA 2 analyzer recorded elevated readings from the direction of Tanks 540, 541, 532 and 960. (See Appendix 4) Additional documents were requested.

The inspection team reviewed the operator logs for responding to exceedances at the real-time analyzers and discussed the processes in place for notification and investigation. If a real-time analyzer records a concentration greater than 2.9 ppb, an email and text alert are sent to the area field supervisor. If the exceedance was greater than 10 ppb, operators have been instructed to use the handheld analyzer and attempt to locate the source. A summary report is typed in a shared word document. Depending on the person, notes range from just a statement of the time and concentration to details related to thermal oxidizer status, barge operations status, and/or actions taken. While we were onsite, it was discovered that the automated emails/texts are sent just once every 30 minutes and may exclude elevated concentrations that immediately follow the first triggering event. This could result in operators not initiating a field investigation if the initial concentration is between 2.9 and 10 ppb. [AOC 2]

At approximately 10:30am, the inspection team went into the field to relocate eGC EPA 2 closer to the fenceline, east of Tank 807 and south of Tank 808. Mr. Bobbs and Ms. Morrell climbed to the top of Tanks 807, 808, and 809 and monitored for benzene using an UltraRae 3000 PID with a benzene separation sorbent tube. Mr. Bobbs discovered that the ball valves for the hermetic gauges on Tanks 808 and 809 were missing caps. Mr. Bobbs took a photo of the hermetic gauge for tank 808 (Photo 1). [AOC 3] Inspectors also detected benzene concentrations on top of tank 807 up to 3.7 ppm near the weighted manway (Component 22EV-1807). [AOC 5]

At 3pm, Dr. Frey and Ms. Morrell met by phone with Hugh Campbell, HSSE Manager. Mr. Campbell has been with the facility for four months. We discussed the past and current processes related to the facility's fenceline monitoring program and root cause identifications. Mr. Campbell recognized that the facility has had difficulties in determining causes and appropriate follow-up actions. [AOC 4, AOC 8] (see Section II-a) He explained the changes that he is implementing, including the integration of Lean Management processes and how incidents are being investigated and communicated. After the meeting, document review continued, including a review of pump inspection records for 809A and 809B and of 1-week passive sampling data.

In the field, Mr. Bobbs and ERG relocated eGC EPA 1 west of its previous position, in attempts to be downwind of a barge waiting to be loaded from Tank 926 at Dock 3A (See Appendix 4). Mr. Bobbs observed the top of Tank 926 and measured benzene concentrations up to 146 ppm using a PID with benzene separation tube emanating from the weighted manway (Component 22TEV-926). [AOC 5] Mr. Bobbs noted that at the time of measurement that the nitrogen blanket pressure in Tank 926 was 1 inch of water column ("inH₂O"). Information related to vacuum breaker and weighted manway pop-off pressures and nitrogen blanket regulator settings was requested. Mr. Bobbs also observed that sample site PA-15 and PA-15.5 was not located where indicated on maps provided by Total. When the coordinates provided in Total's quarterly fenceline monitoring reports were reviewed, multiple inconsistencies were discovered. [AOC 6] The eGC EPA 2, which was located downwind of Tank 807, detected a benzene concentration of 5.9 ppb at 3:36 pm. Mr. Boyd described recent repairs that had been made to the nitrogen regulator on Tank 807. [AOC 10] The inspection team departed the facility around 5:40pm.

On September 15, 2022 the inspection team arrived at 8:15 am. The team reviewed eGC data collected from both Total and EPA's analyzers overnight. The eGC EPA 1 detected elevated benzene concentrations, which are believed to be a result of connecting and disconnecting hoses from the barge at Dock 3A. The eGC EPA 1 was positioned downwind of Dock 3A, where a barge was loading benzene product from Tank 926 overnight. Mr. Bobbs requested and reviewed the log sheet for the barge loading and compared it to the eGC detections to find possible benzene sources. The eGC EPA 1 detected a benzene concentration of 78 ppb at 5:16 pm on September 14, 2022, which was when the barge disconnected from the transfer hose after being refused loading due to high pressure in the barge. The barge returned after depressurizing and reconnected the transfer hose at 9:10 pm. The eGC EPA 1 detected a benzene concentration of 128 ppb at 9:06 pm, which was right before the transfer hose was connected, and a benzene concentration of 19 ppb at 9:26 pm, which was after the transfer hose was connected but before product loading started. [AOC 1]. The eGC EPA 2 detected elevated benzene from the direction of Tank 807. Mr. Bobbs and ERG returned to the field and Dr. Frey and TCEQ remained in the conference room. Discussions related to past exceedance events continued, and site-specific meteorological data from April to June 2022 was requested (see Section II-a). It was also determined that the following benzene containing tanks are equipped with weighted manways and a nitrogen blanket: 926, 928, 929, 930 (out of service at time of inspection), 807, 808, 809, 810, 941, and 946.

In the field, eGC EPA 1 was moved to downwind of Tank 926. Mr. Bobbs observed the top of Tank 926 and detected a constant plume of benzene concentrations of up to 120 ppm emanating from the weighted manways. Mr. Bobbs was told that the tank pressure was 1 inH₂O and that the pressure vacuum breakers are set to 3.75 inH₂O. Weighted manway set pressures are intended to be greater than the pressure vacuum breakers. Benzene concentrations of up to 1.5 ppm were detected at the pressure vacuum breakers. [AOC 5] Mr. Bobbs also observed that the ball valve for the hermetic gauge on the tank was missing a cap. [AOC 3] The team returned to the conference room around 11:30 am.

Around 1pm, TCEQ received notification from their mobile monitoring team that benzene had been detected off-site, near the west fenceline of Total with winds coming from the east. Concentrations ranged from 5 to 10 ppb. It was determined that the detections were near sample station PA-11. The inspection team requested to go in the field to observe tanks that could be impacting the fenceline and have off-site impacts. Tanks that could contain benzene in the area include Tanks 562, 563, 531, 530, and 902.

At approximately 2:20pm, Dr. Frey, Ms. Morrell, Mr. Miller, Mr. Bankole, Ms. Youngson, Ms. Froemming, and contractor Mr. Kris Brown (Senior Project Manager for LDAR and BWON) arrived on the road between Tanks 902 and 562. Ms. Morrell observed strong odors and elevated background VOC concentrations on the PID (0.05 to 0.20 ppm VOC). At the top of Tank 902, VOC concentrations ranged from 12 to 153 ppm. The inspection team could audibly hear the vacuum breakers opening and closing. The tag on the breakers indicated that the set pressure was 10 inH₂O. Benzene concentrations as high as 1.575 ppm were recorded. [AOC 5] Tank 902 contains diesel. Mr. Miller captured OGI videos showing hydrocarbons emitting from component 22TV902B and the vacuum breaker (Video 1).

At approximately 2:45pm, the inspection team approached Tank 562. On the ground, a benzene concentration of 0.725 ppm was detected. The team observed the top of the tank, which is equipped with an external floating roof, and Mr. Bankole estimated it was at around 50% full. Benzene concentrations as high as 0.575 ppm were recorded. Mr. Miller captured an OGI video showing hydrocarbon emissions from pipes on the roof (Video 2). [AOC 7]

At approximately 3:30 pm, the inspection team entered the saturated liquids unit. No emissions were detected with the PIDs. Mr. Miller identified one gauge valve leak using the OGI camera. At approximately 4pm, the inspection team arrived at benzene Tanks 928, 929, and 930. Tank 930 was out of service. Emissions of VOC and benzene were detected at multiple locations at Tanks 928 and 929, see Table 1. [AOC 5]

Table 1. Highest detected concentrations of VOC and benzene at various tanks.

Tank Number	Component Number	Highest VOC concentration detected	Highest benzene concentration detected
Tank 807	22EV-1807	NA	117 ppm
Tank 808	22EV-1808	NA	0.45 ppm
Tank 926	22TEV-926	NA	146 ppm
Tank 928	22TV-928A	12 ppm	1.725 ppm
Tank 928	22TV-928B	3.0 ppm	0.400 ppm
Tank 929	22TV-929A	NA	0.075 ppm
Tank 929	22TV-929B	0 ppm	0 ppm
Tank 929	22EV-929	9.026 ppm	0.300 ppm

At approximately 2:50pm, Mr. Bobbs and ERG relocated eGC EPA 2 to an area southwest of Tank 541. Afterwards, Mr. Bobbs observed the top of Tanks 541, 807, 808, 810, and 909. Mr. Bobbs discovered that the ball valves for the hermetic gauges on Tanks 807 and 810 were missing caps. [AOC 3] Mr. Bobbs detected benzene as high as 117 ppm at the weighted manway at Tank 807. He was told that the tank pressure was 0.5 inH₂O at the time, while the pressure setting of the manway was between 1.8 and 3.6 inH₂O. Mr. Bobbs climbed on top of Tank 808, but was not able to access the weighted manway on top of Tank 808 due to the catwalk limitations. Benzene was detected as high as 0.45 ppm on top of Tank 808 approximately 10 feet downwind of the Tank 808 weighted manway (Component 22EV-1808). Upwind of Tank 810, no benzene was detected and Mr. Bobbs was told that the nitrogen pressure was set at 5 inH₂O. [AOC 5] Tank 909 contains diesel, and no emissions were detected. Hydrocarbon emissions were observed emanating from Tank 541. The tank is equipped with an external floating roof (Videos 3 and 4). [AOC 7] The inspection team departed the facility around 5:20pm.

On September 16, 2022 the inspection team arrived at 7:10 am. Mr. Bobbs and ERG entered the field to disassemble eGC EPA 1 and eGC EPA 2. Dr. Frey, Ms. Morrell, Mr. Miller requested to observe Tanks 941 and 946. However, Ms. Geist informed us that the weighted manway lid on Tank 941 had "blown off" overnight and that the area was unsafe to review. We remained in the conference room and continued document review. Mr. Bobbs and ERG returned at 9:30am.

At 9:35am, Mr. Bankole provided an updated status on Tank 941. When EPA had requested to observe all benzene containing tanks on the afternoon of September 15, Total sent a contractor to observe the tanks. The missing weighted manway lid was discovered around 12:30pm on September 15 via visual inspection. The lid was replaced around 7:45am on September 16. Total stated that handheld benzene detectors were used at ground level, and no benzene concentrations were detected. The tank level was 9 feet and it appeared that the nitrogen regulator/gauge seemed to be broken, per Mr. Bankole. [AOC 10]

It is unclear why the inspection team was denied access to the tank when we first arrived. Mr. Bankole did offer to take us to tanks 941 and 946 at 10am, however it was raining, and the inspection team needed to prepare for the closing conference. Follow-up documentation was requested.

Section II-a – Analysis of Facility Submitted Corrective Action Plans

At multiple times during the inspection, the inspection team discussed the facility's root cause analysis, initial corrective actions, and submitted Corrective Action Plans ("CAPs") with Mr. Bankole and Ms. Howard. Below is a summary of multiple topics related to Total's CAPs, especially the most recent "Root Causes Analysis Status Report" dated August 24, 2022 (Appendix 6). Inspectors reviewed exceedance events and actions taken by Total to reduce fenceline concentrations below the action level, as required by 40 CFR 63.658.

Developing a Site-Specific Monitoring Plan as a Corrective Action

Total's CAP dated August 24, 2022 (Appendix 6) states, "The Refinery is using a consultant to evaluate and prepare a Site-Specific Monitoring Plan (SSMP)..." with a tentative implementation date of December 31, 2022. Total also cites the development of a SSMP as a corrective action in their May 14, 2022, February 14, 2022, and November 12, 2021 CAPs (with completion dates of June 30, 2022). Total first mentioned the use of a contractor to develop a SSMP in their August 13, 2021 CAP. However, in discussions with Mr. Bankole, the statement the August 24, 2022 CAP was not accurate and Total was not planning on submitting a SSMP to EPA. [AOC 8]

Vacuum Truck Procedures

In CAPs dated July 3, 2019 and August 29, 2019, Total stated:

"For PA-01.6, the individual sampler station results were above $9.0 \mu\text{g}/\text{m}^3$ for two sampling periods. The cause for the elevated benzene at PA-01.6 appears to be due to exceeding the VOC concentration at a vacuum truck's carbon absorption system (CAS) that was being used to abate hydrocarbon emissions while removing Dock 1 from service and while Dock 1 was being put back in service following planned maintenance and inspection."

No specific corrective actions were proposed for this root cause. It does not appear that vacuum truck procedures were cited as a root cause in any following CAPs. However, in Total's CAP dated September 30, 2020, a corrective action was added to review vacuum truck procedures by October 31, 2020. Total wrote that this action was to ensure vacuum truck emissions will not impact the fenceline when used for clearing sumps, piping, and equipment near the fenceline. In Total's CAP dated December 8, 2020, the self-imposed deadline for this corrective action was extended to January 31, 2021. In Total's CAP dated February 12, 2021, the item was marked completed on January 31, 2021 with a statement, "The vacuum truck procedure will be revised and routed for authorization with the updates resulting from the review." The inspection team requested a copy of the updated vacuum truck procedures while onsite. The procedures stated that the last revision date was June 2, 2020. Dr. Frey inquired if that date was accurate, and Mr. Bankole stated that it was correct. It is unclear why reviewing the vacuum truck

procedures was an appropriate corrective action and why it was deemed revised and completed in January 2021 when the document itself was last revised in June 2020. [AOC 8]

Heat Exchanger Leak into Cooling Tower

Total attributed 2nd quarter 2022 exceedances at sample sites PA-14 and PA-15 to heat exchanger leaks into the FPM cooling tower. Every month, the cooling tower water is tested for strippable fugitive VOC emissions using the El Paso Method. Per Total's permit, VOC concentrations of 0.08 ppm or greater must be repaired as soon as practical, but no later than the next shutdown. VOC concentrations of 0.8 ppm or greater requires immediate action. PA-14 is approximately 120 yards northwest from where cooling tower samples are collected (Photos 2 and 3). PA-15 is approximately 500 yards northeast from where cooling tower samples are collected (Photo 4). Table 2 shows the 2-week benzene concentrations at PA-14 and PA-15. Table 3 is a timeline of heat exchanger repairs, sampling results, and facility actions.

Table 2. Biweekly concentrations of benzene at sample sites PA-14 and PA-15.

Sampling Period End Date	PA-14 Benzene Concentration ($\mu\text{g}/\text{m}^3$)	PA-15 Benzene Concentration ($\mu\text{g}/\text{m}^3$)
4/26/2022	10.8	19
5/9/2022	8.61	15.3
5/24/2022	9.55	4.23
6/6/2022	8.0	3.38
6/20/2022	1.34	2.88
7/5/2022	1.12	1.94

Ms. Morrel inquired if the excess emissions event due to a heat exchanger leak in May 2022 was reported to TCEQ. Ms. Howard confirmed no report had been submitted and Mr. Bankole stated that the calculations would be worked on by Total's engineering team. [AOC 9]

EPA observed that concentrations of benzene at PA-15 were elevated prior to the discovery of the heat exchanger leak, and decreased from April to July. EPA observed that concentrations at PA-14 were the highest during the sample period ending April 26, 2022. Due to the lack of data correlation and the average daily wind direction, it is unlikely that a single event was the cause of elevated results at both sample sites. It is possible that a separate event occurred closer to PA-15 in April, that also impacted PA-14, prior to the heat exchanger leak detected May 24, 2022. [AOC 4]

Another heat exchanger leak was detected on August 22, 2022. It is unclear what is causing the heat exchangers to fail, and a "Mode of Failure" report is pending. Per Mr. Bankole, heat exchanger bundles are expected to last longer than 5 years.

Table 3. Timeline of events related to heat exchanger leak impacting VOC concentrations at the FPM cooling tower, per Mr. Bankole.

Date	Action
September 2021	Crude Unit shutdown
October 2021	New heat exchanger bundles installed
April 19, 2022	FPM Cooling Tower passed testing (0.01 ppm)
May 23, 2022	FPM Cooling Tower failed testing (13.40 ppm)
May 26, 2022	Environmental Department notified of elevated VOC emissions
June 1 to 2, 2022	Water flow reversed at leaking heat exchangers
June 3, 2022	FMP Cooling Tower passed testing (0.01 ppm) Sample periods ending 4/26/22 and 5/9/22 fenceline results received
June 23, 2022	Heat exchangers removed from service
June 25, 2022	New bundles installed, repairs complete, heat exchangers returned to service
July 7, 2022	FMP Cooling Tower passed testing (0.01 ppm)
August 22, 2022	FMP Cooling Tower failed testing (11.27 ppm) Water flow reversed at leaking heat exchangers
August 23, 2022	FMP Cooling tower passed testing (0.01 ppm)

2022 Exceedance at Sampler Station PA-1.6

In the August 24, 2022 CAP, Total attributed the May 9 to May 24, 2022 exceedance at sample site PA-1.6 to annual dock testing being conducted on May 11, 12, 16, and 17. [AOC 11] The laboratory results showing the exceedance were received on June 16, 2022. The sample result for PA-1.6 was 81 $\mu\text{g}/\text{m}^3$ for the two-week period. The corrective action was to “charter an investigation team” to review each phase of dock testing, to be completed by September 30, 2022, 106 days after receiving the sampler results. [AOC 8]

Dr. Frey received a copy of a September 11, 2022 “Incident Investigation Status Report”. The report references two real-time analyzers having exceedances on May 24, 2022 with values ranging from 64.6 $\mu\text{g}/\text{m}^3$ to 412 $\mu\text{g}/\text{m}^3$ during the time period of 2:26 pm and 4pm. The report states that the exceedance reflected in sample site PA-1.6 appears to be the result of maintenance activity occurring at Dock 1, when two sump header valves were replaced on May 24, 2022. [AOC 11] The preliminary findings include that sump head piping was not flushed with soap and water, further evaluation is needed to determine if the system has adequate bleeders, and that dock operators did not receive notifications of the real-time analyzer exceedances. [AOC 2] Dr. Frey requested the Standard Operating Procedures (“SOP”) for this maintenance activity, but per Mr. Bankole, no SOP currently exists. Dr. Frey then reviewed the benzene fenceline Sample Report from the laboratory which shows that the 2-week sample at PA-1.6 was collected at 10:23am on May 24, 2022. This makes it impossible for the event occurring from 2:26pm to 4pm on May 24 to impact the sample period from May 9 to May 24, 2022. [AOC 4]

Section III – AREAS OF CONCERN

EPA Region 6 inspector Sarah Frey and EPA AED inspector Nicholas Bobbs conducted a closing conference at TotalEnergies Petrochemicals & Refining USA, Inc. Port Arthur Refinery at 12:00 PM on September 16, 2022 for the inspection. During the closing conference, Dr. Frey and Mr. Bobbs reviewed following Areas of Concern (“AOC”) noted during the inspection. The sign-in sheet for the closing conference is included as Appendix 7. Digital copies of all photographs and OGI videos were shared with the facility electronically during and after the inspection. The facility informed Dr. Frey of any photos or documents that they would be claiming as CBI. Mr. Bankole kept detailed receipts of documents taken offsite by inspectors. We departed the facility around 1:30 pm.

- 1) Elevated concentrations of benzene were recorded by the eGCs before, during, and after active barge loading.
- 2) Inspectors observed barriers to timely responses to real-time analyzer data. Creating standard operating procedures, documenting actions taken, and conducting a barrier analysis could improve response timeliness and effectiveness.
- 3) Inspectors observed open-ended lines, or missing caps, on the ball valves for hermetic gauges on Tanks 807, 808, 809, 810, and 926. 40 CFR 61.242-6(a)(1) requires that all open-ended lines be equipped with a cap, blind flange, plug, or a second valve. 40 CFR 61.242-6(a)(2) requires that the cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.
- 4) Inspectors observed inaccurate and ineffective root cause analyses for exceedance events. 40 CFR 63.658 requires the Facility to initiate a root cause analyses to determine the causes of exceedances and to determine appropriate corrective actions.
- 5) Inspectors observed and detected elevated concentrations of VOC and benzene from multiple vacuum breakers and weighted manways at Tanks 902, 926, 928, 929, 807, 808, and 810. This may be a potential source of benzene impacting the fenceline.
- 6) Inspectors observed that the actual coordinates of the passive samplers do not match the coordinates in Total’s quarterly reports required by 40 CFR 63.655(h)(8)(iii).
- 7) Inspectors observed hydrocarbon emissions at Tanks 541 and 562, which are equipped with external floating roofs. Videos 2, 3, and 4.
- 8) Inspectors observed that Corrective Action Plans, as required by 40 CFR 63.658(h) and submitted to TCEQ, contain inaccurate information and inadequate actions to reduce fenceline concentrations below the action level.
- 9) The heat exchanger leak detected on May 23, 2022 was not reported until September 13, 2022, 113 days after the incident and 1 day after EPA began their inspection. The calculations submitted on September 13, 2022 revealed a release of 134 lbs of benzene, over 13 times higher than the reportable quantity of 10 lbs. This may be a violation of The Emergency Planning and Community Right-to-Know Act (“EPCRA”) Section 304. Further, 30 TAC 101.201 requires that companies must submit an initial notification in the State of Texas Environmental Electronic

Reporting System ("STEERS") within 24 hours of discovery of the emissions event if a reportable quantity will be exceeded and a final report is due two weeks from the end of the event after the entity has fully evaluated the incident.

- 10) Inspectors observed reoccurring issues related to the nitrogen gas regulators, pressure gauges, and associated set pressures for Tanks 926 and 807. Tank 941 may have similar problems occurring.
- 11) Inspectors observed the attribution of routine maintenance activities to elevated benzene concentrations at the fenceline. Procedures should be implemented in order to reduce emissions associated with regular activities.

Section IV – FOLLOW UP

The following information was received by EPA after exiting the Facility on September 16, 2022:

September 22, 2022 – EPA and Total had a conference call to discuss the document request status and details relating to Tank 926. EPA requested additional documents. Total provided a summary of actions taken since EPA departed the facility on September 16. This included the decision to hire a third-party to evaluate and respond to benzene emissions detected by real-time analyzers, as well as evaluating all tanks at the refinery for fugitive emissions. Additionally, steps are being taken to alter the automated alerts sent in response to benzene emissions detected at the real-time analyzers. Discussions have been held with neighboring facilities and barge companies to address fenceline benzene impacts from off-site sources.

October 12, 2022 – EPA and Total had a conference call to discuss the document request status and facility's emissions inventory process. Total shared that all caps of open-ended lines had been replaced and that the gauging company will be instructed to notify facility personnel if caps are missing.

October 27, 2022 – Total provided stack test procedures to TCEQ with a tentative test date the week of December 12, 2022 for two of the three thermal oxidizers.

November 10, 2022 – EPA and Total had a conference call to discuss additional corrective actions taken to date. Total shared that repairs had been made at Tanks 902 and 562. The pressure settings and weights of vacuum breakers and weighted manways on tanks are being evaluated by engineers. However, problems with the nitrogen regulator on Tank 926 persists. Total stated that the tank and its associated thermal oxidizer are being closely monitored to prevent excess emissions. Additionally, Total contracted a third party to review the barge loading process and identify engineering solutions to reduce emissions. Total also stated that improvements and training are being implemented for the investigation of exceedances detected by the real-time analyzers.

Section V – LIST OF APPENDICES

Appendix 1 – Photograph Log – 4 photos

Appendix 2 – Video Log – 4 OGI videos

Appendix 3 – Opening conference sign-in sheet

Appendix 4 – ERG eGC Report to EPA

Appendix 5 – Document Request

Appendix 6 – CAP, “Root Causes Analysis Status Report” dated August 24, 2022

Appendix 7 – Closing conference sign-in sheet

Appendix 1

Photograph Log



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 1

Location: TotalEnergies Petrochemicals & Refining USA, Inc. - Port Arthur Refinery		
City: Port Arthur	County/Parish: Jefferson	State: Texas

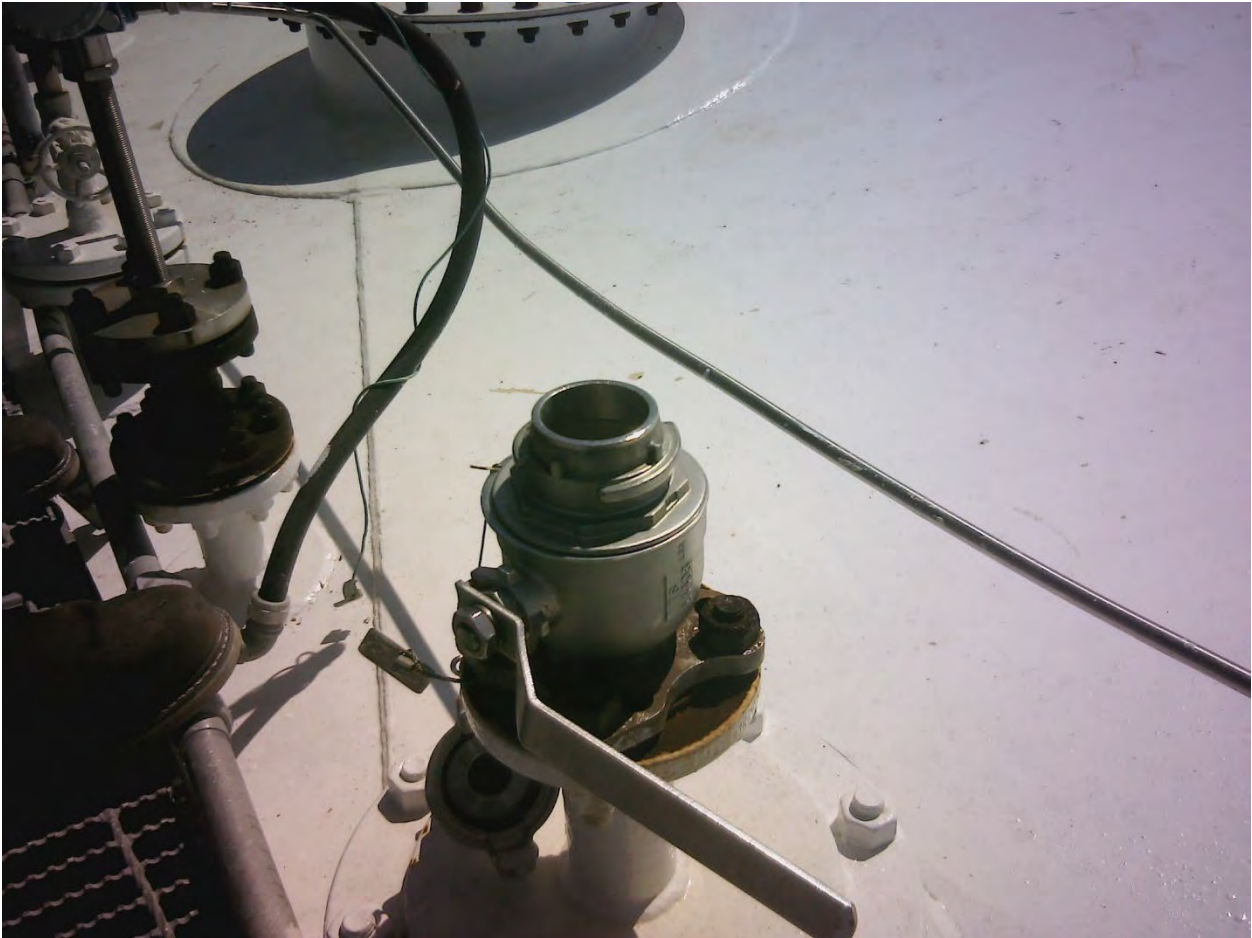


Photo File Name: DC_0201.jpg

Date of Photo: 9/14/2022

Time of Photo: 11:48 am

Photographer: Bobbs

Description: Tank 808 ball valve for the hermetic gauge missing a cap. Open-ended line.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 2

Location: TotalEnergies Petrochemicals & Refining USA, Inc. - Port Arthur Refinery		
City: Port Arthur	County/Parish: Jefferson	State: Texas



Photo File Name: DSCN0590.jpg

Date of Photo: 9/13/2022

Time of Photo: 4:24 pm

Photographer: Frey

Description: Passive benzene sampling station PA-14, taken from location that cooling tower water samples are collected. Between two cooling towers. Arrow and text box added for clarity.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 3

Location: TotalEnergies Petrochemicals & Refining USA, Inc. - Port Arthur Refinery		
City: Port Arthur	County/Parish: Jefferson	State: Texas



Photo File Name: DSCN0591.jpg

Date of Photo: 9/13/2022

Time of Photo: 4:24 pm

Photographer: Frey

Description: Zoomed in view of passive benzene sampling station PA-14, taken from location that cooling tower water samples are collected. Between two cooling towers. Arrow and text box added for clarity.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 4

Location: TotalEnergies Petrochemicals & Refining USA, Inc. - Port Arthur Refinery		
City: Port Arthur	County/Parish: Jefferson	State: Texas



Photo File Name: DSCN0593.jpg

Date of Photo: 9/13/2022

Time of Photo: 4:47 pm

Photographer: Frey

Description: Passive benzene sampling station PA-15 with cooling towers in the background. Arrows and text boxes added for clarity.

Appendix 2

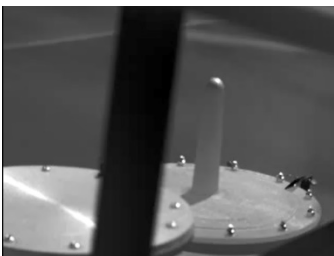
Video Log



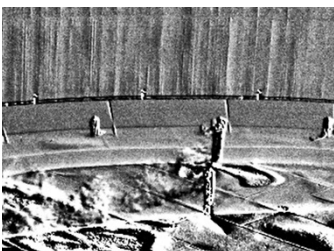
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Video Log

Location: TotalEnergies Petrochemicals & Refining USA, Inc. - Port Arthur Refinery		
City: Port Arthur	County: Jefferson	State: Texas



Video File Name: MOV_0062.mp4
 Date of Video: 9/15/2022
 Time of Video: 2:42 pm
 Videographer: Miller
 Description: Infrared OGI video of emissions from emergency weighted manway located on top of diesel Tank 902 where elevated readings were recorded with handheld monitoring equipment.



Video File Name: MOV_0064.mp4
 Date of Video: 9/15/2022
 Time of Video: 2:56 pm
 Videographer: Miller
 Description: Infrared OGI video of emissions from an external floating roof, Tank 562.



Video File Name: MOV_0214.mp4
 Date of Video: 9/15/2022
 Time of Video: 2:56 pm
 Videographer: Bobbs
 Description: Infrared OGI video of emissions from Tank 541, observed emanating from the rim seal on the north side.



Video File Name: MOV_0217.mp4
 Date of Video: 9/15/2022
 Time of Video: 3:16 pm
 Videographer: Bobbs
 Description: Infrared OGI video of emissions from Tank 541, observed from ground level.

Appendix 3

Opening Conference Sign-In Sheet

Opening/Pre-Inspection Meeting

Commence opening/pre-inspection meeting Time: 9:30 am

Name	Title	Representing	Telephone No.
Sarah Freg	Inspector	EPA RC6	214 665 6499
Jeanette Morrell	Investigator	TCEQ R10	409-899-8770
Alexia Scott	Investigator	ERG ERG	[REDACTED] 919-468-778
Elizabeth Hubbard	Investigator	ERG	[REDACTED] 919-468-771
Mike Miller	Investigator	TCEQ	512-234-0516
Nicholas Bobbs	Inspector	EPA HQ	202-564-0726
Amy Geist	Manager - Environment	Total Energies	[REDACTED] 281-884-7235
Jella Pulman	ABC - HSE	Total Energies	713-483-5364
Roger Allison	LEAN COORDINATOR	TOTAL ENERGIES	409-985-0325
Anthony McLaughlin	Envir	Total Energies	409 985 0360
Meredith Younger	Environmental	Total Energies	409-985-0642
Trisha Froemling	Environmental	Total Energies	—
ARVIN PAULY	OPS MANAGER	TOTAL ENERGIES	409-985-0362
Connie Howard	Environmental	Total Energies	409-985-0377
Hugh Campbell	HSE MANAGER	TOTAL ENERGIES	[REDACTED] 409-985-0030
Emmanuel PINEAU	Planning & Econ. Mgr	TOTAL ENERGIES	[REDACTED] 409-985-0206

Carl Boyd OMS Supervisor TOTAL ENERGIES 409-985-0117
 Conclude opening/pre-inspection meeting Time: _____

Isaac Bankole Environmental TOTAL ENERGIES 409 985 0446
 Superint.

Tom Chavez GM Total Energies 33

Alfred BELLGATE Technical Manager Total Energies [REDACTED] 409-985-0103

Erin Tanimura (by Phone) EPA ORC tanimura.erin@epa.gov

Initials / Date: AD / 9/12/22

Appendix 4

ERG eGC Report to EPA

**eGC Air Monitoring
TARGETING/INSPECTION REPORT**

Inspection Date(s):	September 12, 2022 – September 16, 2022	Inspection Announced: {Yes}
Name	Email	
ERG Staff		
Alexia Scott	Alexia.Scott@erg.com	
Liz Hubbard	Elizabeth.Hubbard@erg.com	
EPA Staff		
Nick Bobbs	Bobbs.Nicholas@epa.gov	
Sarah Frey	Frey.Sarah@epa.gov	

Facilities Inspected:

Name	Address	On Site?	eGC Target Compound	eGC No.	Canister Sample Collected
TotalEnergies Petrochemical and Refining USA, INC	7600 32 nd St, Port Arthur, TX 77642	Yes	Benzene	EPA 1, EPA 2	No

SECTION I – INTRODUCTION

Background Information

From September 12, 2022 through September 16, 2022, Alexia Scott and Liz Hubbard of ERG performed mobile air monitoring using the ENMET environmental Gas Chromatograph (eGC) at TotalEnergies Petrochemical and Refining, Inc. in Port Arthur, TX. ERG was joined by several staff from the EPA and TCEQ who provided direction on eGC placement. The purpose of the inspection was to investigate high levels of fence-line Benzene and identify possible sources. The eGCs were deployed to aid in source detection.

ERG deployed eGC EPA 2 in the TotalEnergies facility on September 12th and deployed eGC EPA 1 on September 13th. Both eGCs were left in the facility over-night and were moved to several different locations within the facility during the inspection.

SECTION II – OBSERVATIONS

Quality Assurance

The eGCs are capable of detecting Benzene through a semi-continuous 10-minute sample cycle. Enmet advertises the analysis range of the eGCs to be between 0.3 – 200 ppb. A pre-deployment calibration curve was independently generated by ERG to verify the eGCs performance. Both eGCs were independently tested and verified at a range of 0.5 – 50 ppb. The results of this pre-deployment testing are available as Appendix 2.

The eGCs are also equipped with a one-point auto calibration feature, which produces a calibration factor (CalFactor). The eGCs were calibrated with this feature upon initial set up at the site and when they were moved from site to site. All calibrations performed during the inspection are collated in the “Calibration” tab in the data sheet which is available as Appendix 1. The calibrations were also judged for quality based on the QAPP criteria. The QAPP criteria for calibrations stated that calibrations must have a relative percent difference (RPD) of within 15% when compared to the calibration cylinder concentration. Calibration quality fell into three categories:

- Good - Good calibrations satisfied the QAPP criteria, and the subsequent data was not flagged;
- Tentative - tentative calibrations did not satisfy the QAPP criteria but the CalFactors produced were reasonable therefore data was flagged but not corrected. Data flagged after a tentative calibration have their corresponding CalFactors flagged with a yellow highlight.
- Bad - bad calibrations did not satisfy the QAPP criteria and the CalFactor produced was unreasonable therefore data was flagged and post-corrected. Data flagged from a bad calibration was corrected using the nearest reasonable CalFactor. The corrected data's CalFactors have been flagged in the dataset with an orange highlight. The data was corrected using a Concentration Calculator provided by Enmet which is Appendix 3.

The eGCs are also equipped with wind sensors, these sensors must be directionally oriented to provide accurate data. The wind sensors were appropriately oriented at the initial eGC sites and reoriented whenever the eGCs were moved.

eGC Site Observations

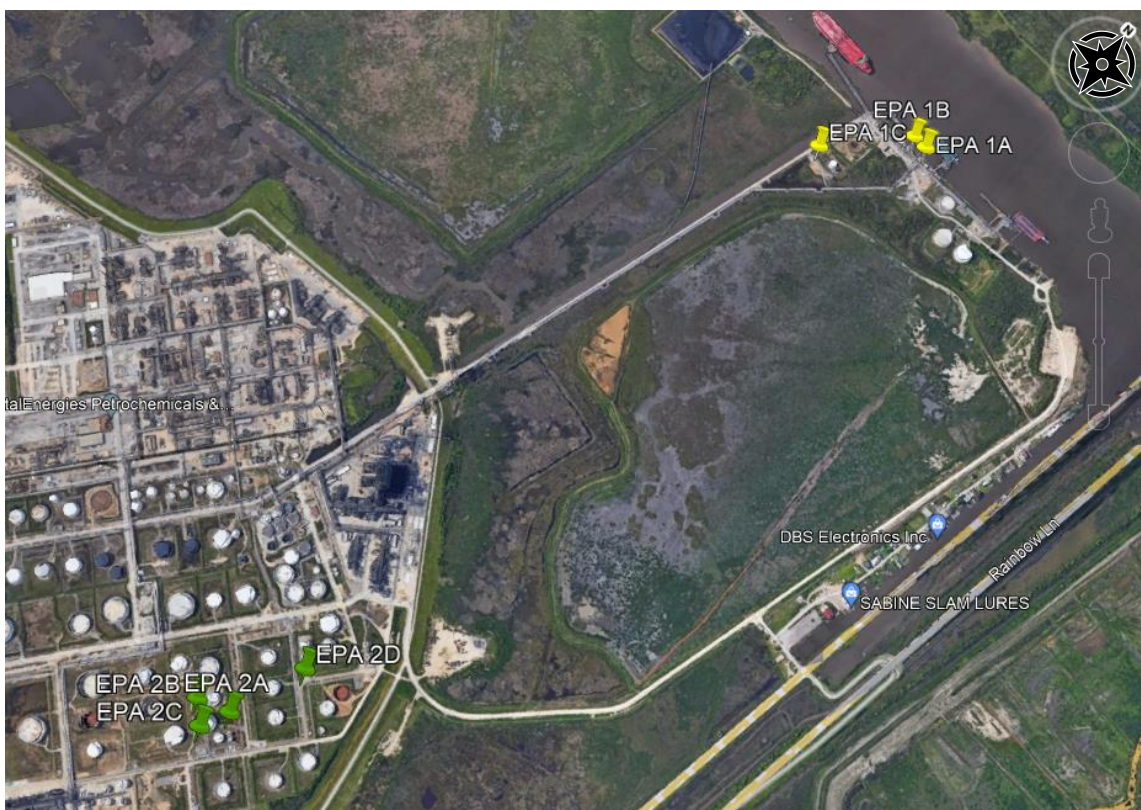


Figure 1. Total eGC Sites

EPA 1 – Loading Docks

Table 1. Summary of EPA 1 Sites

Site Code	GPS Location	Start Date/Time	End Date/Time	Highest Reading
EPA 1A	29.9802, -93.8804	09/13/22 12:36 AM	09/14/22 3:16 PM	173.8 ppb
EPA 1B	29.98025, -93.88085	09/14/22 3:30 PM	09/15/22 9:34 AM	128.1 ppb
EPA 1C	29.9785, -93.88275	09/15/22 10:00 AM	09/16/22 8:46 AM	23.85 ppb



Figure 2. EPA 1 eGC Site Overview

EPA 1A

Site EPA 1A was the first site that EPA 1 was positioned at; the site is located southeast of Dock 3A which is downwind of the dock. EPA 1 was set up at approximately 12:36 pm on September 13, 2022 and ran at site EPA 1A until 3:16 pm on September 14, 2022. The wind during this time frame came predominantly from the northeast and east and was slow, averaging at approximately 0.5 mph.

Notable eGC Activity

- Significant benzene readings were reported from EPA 1 between 2:26 pm – 6:55 pm on September 13, 2022. The highest reading during this window was 48.92 ppb at 6:26 pm. Wind during this period was predominantly coming from the north and north-northeast with wind speed at approximately 1.0 – 1.5 mph.
- Significant benzene readings were reported from EPA 1 between 6:36 am – 8:36 am on September 14, 2022. The highest reading during this window was 173.8 ppb at 7:46 am. Wind during this period was predominantly coming from the north and north-northeast with wind speed at approximately 0 – 1 mph.

EPA 1B



Figure 3. EPA 1B

Site EPA 1B was the second site of EPA 1, this site was located several yards east of site EPA 1A and was still downwind of Dock 3A. EPA 1 was set up at this site at approximately 3:30 pm on September 14, 2022 and stayed there until 9:34 am on September 15, 2022. During this time the wind came from the east-northeast and east, wind speed averaged at around 1.0 – 1.5 mph.

Notable eGC Activity

- A single benzene reading of 78.56 ppb was reported at 5:16 pm on September 14, 2022. Wind was from the east at approximately 1.25 mph.
- Significant benzene readings were reported between 8:26 pm – 10:15 pm on September 14, 2022. The highest reading during this time period was 128.1 ppb at 9:06 pm. Winds during this window were coming from the east-northeast at a strength of approximately 1.0 - 1.5 mph.

EPA 1C

Figure 4. Site EPA 1C

Site EPA 1C was the third site where EPA 1 was positioned, this site was established downwind of T 926. EPA 1 was set up on an access road southeast of T 926 at approximately 10:00 am on September 15, 2022. EPA 1 stayed at this site until 8:46 am on September 16, 2022. This was the last site EPA 1 was set up at during this inspection. Winds came predominantly from the east to southeast with a wind speed of approximately 0.5 – 2.5 mph.

Notable eGC Activity

- Significant benzene readings were reported between 1:16 am – 1:56 am on September 16, 2022. The highest reading was 23.85 ppb at 1:46 am. The wind was coming from the east-southeast at approximately 0.5 mph.
- Significant benzene readings were reported between 2:56 am – 3:16 am on September 16, 2022. The highest reading was 19.87 ppb at 1:46 am. The wind was coming from the east-southeast at approximately 0.75 mph.
- Significant benzene readings were reported between 4:06 am – 4:36 am on September 16, 2022. The highest reading was 8.66 ppb at 4:06 am. The wind was coming from the east at approximately 0.75 – 1.5 mph.

- Significant benzene readings were reported between 5:56 am – 6:16 am on September 16, 2022. The highest reading was 7.64 ppb at 6:06 am. The wind was coming from the east at approximately 1.0 – 1.5 mph.

EPA 2 – Benzene Storage

Table 2. Summary of EPA 2 Sites

Site Code	GPS Location	Start Date/Time	End Date/Time	Highest Reading
EPA 2A	29.95895, -93.8844	09/12/2022 1:30 PM	09/13/2022 10:49 AM	6.72 ppb
EPA 2B	29.9587, -93.8853	09/13/2022 11:02 AM	09/14/2022 10:56 AM	9.72 ppb
EPA 2C	29.9583, -93.88475	09/14/2022 11:14 AM	09/15/2022 2:16 PM	8.75 ppb
EPA 2D	29.96078, -93.8837	09/15/2022 2:30 PM	09/16/2022 7:57 AM	1.74 ppb

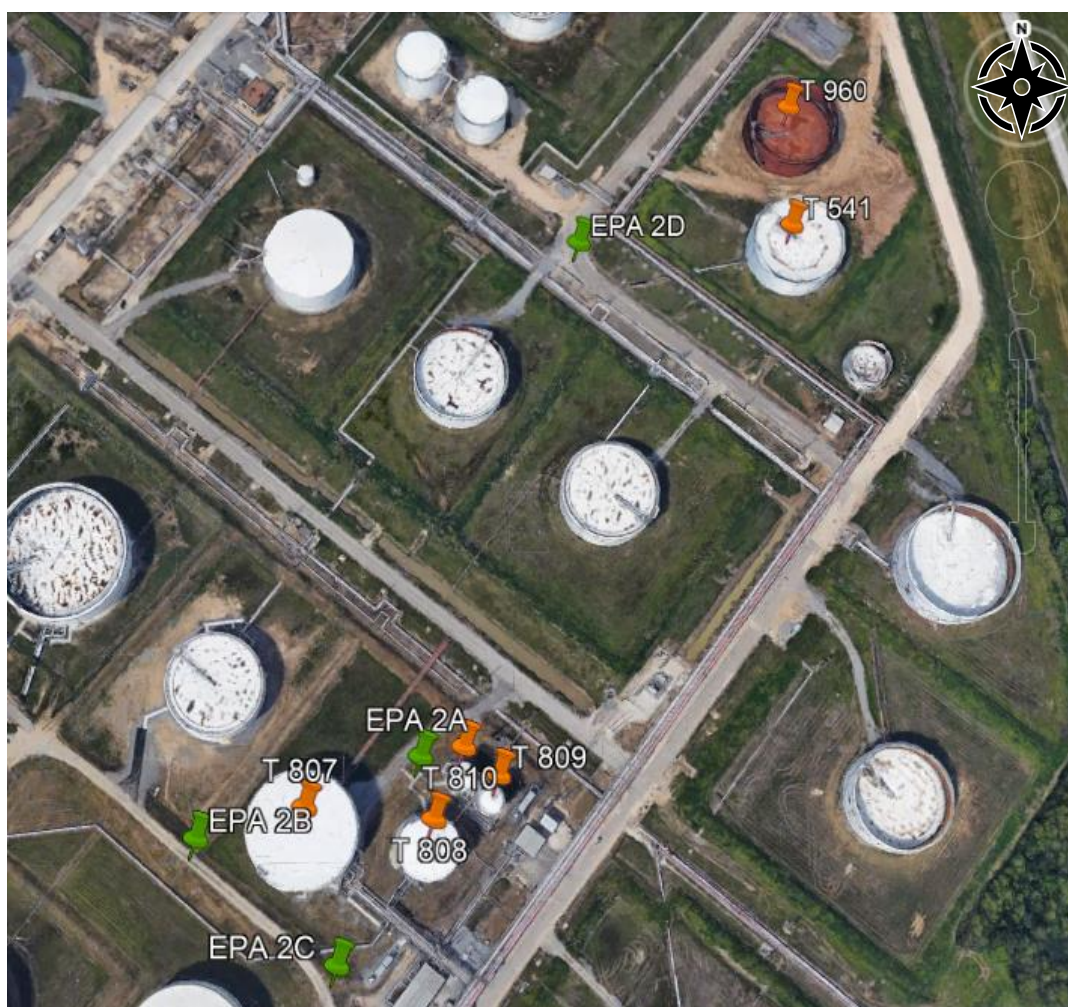


Figure 5. EPA 2 eGC Site Overview

EPA 2A

Site EPA 2A is the first location EPA 2 was deployed at during the inspection. The site was located in between several tanks including T807, T808, T809, T810. Two thermal oxidizers (TO) were also in this area and the BASF fence line is southeast of the site. EPA 2 was set up at approximately 11:00 am on September 12, 2022 and stayed at this site until approximately 10:49 am on September 13, 2022. The wind was coming from between the east-southeast and east-northeast at a speed of approximately 0.75 to 1.5 mph.

Notable eGC Activity

- Significant benzene readings were reported between 8:56 am – 9:46 am on September 13, 2022. The highest reading in this window was 6.72 ppb at 9:46 am. The wind was coming from the northeast at a speed of approximately 1.0 mph. This data was post-corrected to adjust for poor eGC calibrations in the field.

EPA 2B

Site EPA 2B is located southeast of EPA 2A and the benzene tanks on a service road, the site was also northwest of the BASF fence line. EPA 2 was set up at this site at approximately 11:02 am on September 13, 2022 and stayed there until 10:56 am on September 14, 2022. The wind during this time was coming from the north and northeast at a speed of 1.0 – 2.5 mph.

Notable eGC Events

- Significant benzene readings occurred between 12:36 pm – 2:06 pm on September 13, 2022. The highest reading in the window was 5.46 ppb at 1:36 pm. The wind during this period was coming from the northeast and east at a strength of 1.5 – 2.5 mph.
- A significant benzene event occurred between 10:26 pm – 11:06 pm on September 13, 2022. The highest reading in the window was 9.72 ppb at 11:06 pm. The wind during this period was coming from the north-northeast at a strength of 0.5 – 1.0 mph.

EPA 2C

Site EPA 2C was located further southeast on the same service road as EPA 2B. EPA 2C is located south of the benzene tanks and thermal oxidizers and northwest of the BASF fence line. EPA 2 was set up at approximately 11:14 AM on September 14, 2022 and stayed at EPA 2C until 2:16 PM on September 15, 2022. The wind during this timeframe was coming from the north-northeast at a speed of 0.5 – 2.5 mph.

Notable eGC Events

- A single benzene reading of 5.94 ppb was reported at 3:36 pm on September 14, 2022. Wind was from the northeast at approximately 2.0 mph.
- Significant benzene readings were reported between 11:26 pm on September 14, 2022 and 12:26 am on September 15, 2022. The highest reading in this window was 5.59 ppb at 11:36 pm. The wind was coming from the north at a speed of 1.0 – 1.5 mph.

- Significant benzene readings were reported between 5:36 am and 6:16 am on September 15, 2022. The highest reading in that window was 8.75 ppb at 5:36. The wind was from the north-northeast at approximately 1.5 mph.

EPA 2D



Figure 6. EPA 2D

Site EPA 2D was located downwind of T 541 and T 960 at the corner of a service road. This site was further north than the other EPA 2 sites. EPA 2 was moved to this site at approximately 2:30 pm on September 15, 2022 and stayed there until approximately 7:56 am on September 16, 2022. This was the last site that EPA 2 was stationed at during this inspection. The wind came from the north-northeast and the east during this time and had a strength of 0.5 – 2.0 mph.

Notable eGC Events

The EPA 2 did not have any notable events at this site.

Calibration Discussion

By default, the eGCs calibrate every 6 hours and the 15% RDP QA requirement was designed for that calibration schedule. That calibration schedule was, however, turned off for this deployment and eGCs were calibrated manually. eGCs were calibrated upon setup and when they were moved from site

to site, this means they were calibrated less frequently than every 6 hours. This caused more drift to occur in the data and increased the amount of “tentative” graded calibrations.

EPA 2 also experienced an issue which caused the device to fail several calibrations, which is why several “bad” calibrations are present in the data and several subsequent “tentative” calibrations followed. Tentative calibrations followed bad calibrations because eGCs can take several calibrations before they produce “good” calibrations after a bad calibration is performed. Calibration runs display the concentration based off the last previous CalFactor but display the newly generated CalFactor, this means tentative calibrations can look erroneous because of a previously bad calibration even if that tentative calibration generates a good CalFactor. The generated CalFactor is what the subsequent data will be calculated with so if the CalFactor is reasonable then the subsequent data is also reasonable.

SECTION III – Results

The data collected by EPA 1 and EPA 2 are included as Appendix 1. The data was downloaded from the Enmet eGC webserver and has been divided into tabs based on site. There are also tabs for the collated calibrations and for the raw corrected data. Table 3 provides a description of each column of the data.

Table 3. Summary of Data Column Labels

Column	Description
DATESTAMP	Universal Time Zone Date and Time
TIMESTAMP	Central Time Zone Date and Time – This time marks the end of the analytical cycle of the device. The sample time starts at the top of every 10-minute mark. Ex: TIMESTAMP 05:26:16 am means a sample was collected starting at 05:20:00 am and the analytical period ended at 05:26:16 am.
RECORD	Number label assigned to that specific data point
RunType	“MEAS” – data point represents a measurement made by the eGC. “CAL” – data point represents a calibration made by the eGC
Vapor	Describes the target compound of that eGC
Concentration	This is the calculated concentration produced from the eGC integration results. This value is based off peak height, the pre-programed linearization coefficients and the r-factor. Reports in part-per-billion, ppb. Orange cells signify corrected data.

	Yellow cells signify data which follows a Tentative calibration run.
PeakHeight	Reports the height of the target peak for that run
PeakLocation	Reports retention time of the target peak for that run
CalFactor	For MEAS runs, reports the calibration factor used when calculating the concentration for that run, For CAL, reports the new calibration factor generated from the calibration run.
ColTemp	Report the column temperature at the time of reporting
Baseline	Reports the baseline for that run
Ver	Reports the eGC software version
RunCount	Reports the number label of that run
Status	Reports the status of the run, if OK the run was acceptable.
Latitude	Reports the latitude of the eGC at the time of reporting
Longitude	Reports the longitude of the eGC at the time of reporting
WS_ms	WS_ms is a snapshot of the wind speed m/sec when the analysis is complete and is sent to the data logger. The end of the analysis run may vary depending on the application.
WS_avg	WS_avg is the average wind speed during the “sampling” time of the GC. It is during the first two minutes of the cycle.
WindDir	WindDir is in degrees, data is collected every one second for 120 seconds, and the average is displayed example (ENE 76°)
WS10avg	WS10avg is the average wind speed during 5 to 15 minutes of the analysis cycle. Units are m/sec
WD10avg	WD10avg is the average wind direction during 5 to 15 minutes of the analysis cycle. Units are Degrees
WD10sd	WD10sd is the deviation during the 10 minutes average of both the Wind Speed and Wind Direction during the measured 10-minute period.
Battery_Voltage	Reports battery voltage at the time of reporting
EnclosureTemp	Reports enclosure temperature in Celsius at the time of reporting

EngineTemp	Reports engine temperature in Celsius at the time of reporting
AlarmLevel	Reports the alarm level based on the reported concentration.

SECTION IV – Conclusions

As of the completion of this report, ERG was not aware of any follow-up activities from the EPA pertaining to any of these facilities. All conclusions and decisions to follow-up on the findings presented here will be solely at the determination of the U.S. EPA.

SECTION V – Appendix

Attachment 1 – Total eGC Data (.xlsx file)

Attachment 2 – Pre-deployment eGC Benzene Curves (.xlsx file)

Attachment 3 – eGC Benzene Concentration Calculator (.xlsx file)

Appendix 5

Document Request

**TotalEnergies Petrochemicals and Refining USA, Inc., Port Arthur Refinery
PORT ARTHUR, TEXAS
EPA REGION 6 RECORDS/DOCUMENTS REQUEST**

GENERAL PROCEDURE

During the Clean Air Act (CAA) compliance investigation at TotalEnergies Petrochemicals and Refining USA, Inc., Port Arthur Refinery ("Refinery") inspectors will be reviewing records kept for your facility. To expedite this portion of the investigation, EPA is providing you advanced notification of the records that will likely be reviewed on-site. For most documents, EPA will review the records on-site and request copies, as needed. In certain cases, document copies, either electronic or paper, will be requested for later review by EPA.

In preparation for this compliance investigation, EPA has divided this record and document request into two sections. The first section consists of documents that EPA would like available, and copies prepared (as noted) on September 6, 2022. The second section consists of documents that EPA would like available electronically (through a shared FTP website) no later than September 8, 2022. Other documents may also be requested that are not listed. During the investigation, EPA will work with the Refinery to develop a schedule to review these documents.

PART 1 - Please have these documents available on September 6, 2022

1. Provide all benzene air monitoring data in an electronic searchable and editable spreadsheet, for samples taken within and outside the Total Port Arthur Refinery between October 21, 2021 and receipt of this Request, from both permanent and temporary air monitoring locations, including, but not limited to:
 - a. The twenty-two (22) additional temporary samplers, installed in July 2019.
 - b. The four real-time analyzers purchased and installed between July and August 2021.
2. Provide barge loading and unloading schedule for week of September 5 including
 - a. Type of product being loaded or unloaded
 - b. The dock location of the barge loading/unloading, if known
 - c. The tanks being filled/drawn from.
3. Provide all documents pertaining to root cause analyses initiated between February 14, 2022 through the receipt of this letter to determine the cause of any exceedances of the benzene action level ($9 \mu\text{g}/\text{m}^3$) established in 40 C.F.R. Part 63, Subpart CC (hereinafter, "MACT CC").
4. Provide an inventory of all tanks, including tank contents, located at the Total Port Arthur Refinery.
5. Provide a detailed map of the facility layout, including tank numbers, process vent IDs, fenceline monitoring locations (both permanent and temporary), and real-time analyzers.
6. Provide a current status update of the project to permanently route emissions from Tank 807 (and Tank 805) to an emission control device.
7. Provide a current status update of the investigation into the fenceline monitoring spikes for PA1.6 from May 9, 2022 to May 24, 2022, including but not limited to:
 - a. Barge loading and unloading

- b. Vacuum truck operations in the refinery dock area
- c. Marine loading vapor control device operating parameters
- d. Any relief valve maintenance

PART 2 - Please have these documents available by September 8, 2022

1. Provide temperature records for the thermal oxidizers since installation of temperature indicators.
2. Provide the SOP for vacuum truck operations, including updates due to the review of vacuum truck procedures referenced in the root cause analysis submitted on February 14, 2022.
3. Provide a description of the corporate hierarchy and relationship between TotalEnergies Petrochemicals & Refining, USA, Inc. and BTP, including a description of which facility owns and operates tanks 807, 808, 809, 810 and TO 22BZNTHFLR.
4. Provide the following information for Tanks 926, 454, 530, 589, 522, 908, 482, 807, 808, 809, 810:
 - a. Contents of tank (If swing tank, list current contents as of week of September 5, 2022 as well as other contents stored since January 1, 2019 and any planned changes to contents)
 - b. Type of tank (internal floating roof, fixed roof, etc.)
 - c. Type of rim seals (primary and secondary) if applicable
 - d. Tank dimensions
 - e. Date of last tank visual inspection, rim-seal inspection, and 10-year inspection
5. Provide test protocol for upcoming stack test of Thermal Oxidizers for Tank 808. 809, 810 and the Thermal Oxidizer for Tank 926.
6. Provide temperature records for the thermal oxidizers since installation of temperature indicators.

Appendix 6
Facility Submitted Corrective Action Plan
“Root Causes Analysis Status Report”
dated August 24, 2022



TotalEnergies

United States of America

TotalEnergies Petrochemicals & Refining USA, Inc.

Refining & Chemicals

August 24, 2022

FEDERAL EXPRESS

Mrs. Jeanette Morrell, Investigator
Texas Commission on Environmental Quality (TCEQ),
Beaumont Regional Office
3870 Eastex Freeway
Beaumont, Texas 77703

**SUBJECT: TOTALENERGIES PETROCHEMICALS & REFINING, USA, INC.
PORT ARTHUR REFINERY
REFINERY MACT - 40 CFR 63 SUBPART CC
40 CFR §63.658 FENCELINE MONITORING PROVISIONS
TCEQ ACCOUNT NO. JE-0005-H
TCEQ REGULATED ENTITY NO. RN102457520**

Dear Jeanette,

In accordance with the requirements of the 40 CFR §63.658 Fenceline Monitoring Provisions, a written description of the status of the root cause analysis including the status of corrective actions and associated dates is being submitted for the Total Petrochemicals & Refining USA, Inc. - Port Arthur Refinery.

If you have any questions, please contact me at (409) 985-0377 or at connie.howard@totalenergies.com.

Sincerely,

Connie Howard
Environmental Engineering Advisor
Total Port Arthur Refinery

Attachment

Mailing address: P.O. Box 849 – Port Arthur, Texas 77641-0849 – USA
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TotalEnergies Petrochemicals & Refining USA, Inc. – Port Arthur Refinery
Headquarters: 1201 Louisiana Street, Suite 1800, Houston, TX 77002 - USA

EPA2-TEPRI002902

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August 24, 2022

SUMMARY

TotalEnergies Port Arthur Refinery submitted the First Quarter 2022 Benzene Fenceline Quarterly Monitoring Report on Friday, May 12, 2022 in the EPA CEDRI database. The report indicated that the rolling annual average benzene concentration at the end of the quarter was 15.60 $\mu\text{g}/\text{m}^3$ which is above the action limit of 9.0 $\mu\text{g}/\text{m}^3$. During the First Quarter 2022 Reporting Period, there were benzene sample results that exceeded the action limit of 9.0 $\mu\text{g}/\text{m}^3$ at the following sample stations: PA-01.6, PA-06.5, PA-14 and PA-15.

ROOT CAUSE ANALYSIS STATUS

TotalEnergies Port Arthur Refinery has twenty-three (23) passive benzene samplers located at the property fenceline. In addition to the twenty-three (23) passive sampler stations, twenty-two (22) additional temporary samplers located away from the fenceline were installed at the dock area and the Tank 807/Tanks 808, 809 and 810 and their associated vapor combustor area to help identify the potential benzene emission sources. The dock and the Tank 807/Tanks 808, 809 and 810 and their associated vapor combustors are the two locations where most exceedances occur. To help identify the timing of the potential benzene emission events, the additional temporary samplers are sampled weekly. To further reduce the timing of identifying potential benzene emission events, the refinery has installed four (4) real-time fenceline gas chromatograph analyzers between June 2021 and August 2021. Two have been installed on the Dock (PA-01/PA-01.3) and two have been installed in the Tank 807/Tanks 808, 809 and 810 and their associated vapor combustor area (PA-06.5 and PA-07). The Refinery has also purchased three portable hand-held benzene analyzers to evaluate potential fenceline impact during known events.

The Root Cause Analysis (RCA) Team met on the following dates: April 7, 2022, April 21, 2022, May 12, 2022, May 19, 2022, June 9, 2022, June 23, 2022, June 30, 2022 and July 7, 2022. This team analyzed plant/sample data to determine the root cause(s) of the elevated benzene readings to identify and implement long-term corrective actions needed to comply with the fenceline monitoring provisions. The RCFA team is made up of environmental, process engineering, instrumentation/electrical, analyzer, process controls/systems, rotating equipment and fired equipment technical personnel with expertise to determine and implement the needed maintenance to improve the destruction efficiency at each thermal oxidizer.

Technical performance studies were conducted on all three benzene thermal oxidizers under Texas Audit Privilege to ensure compliance with the permit required 98% VOC destruction efficiency. The technical performance test was performed at Tank 926 vapor combustor during the week of January 18, 2021 and during the week of January 25, 2021 for the vapor combustor for Tanks 808, 809 and 809. The benzene vapor combustor for Tanks 928, 929 and 930 was tested in November 2020.

A capital project was implemented that installed a stack temperature analyzer on each benzene vapor combustor in August 2021. This project allows continuous monitoring of each vapor combustor to ensure destruction efficiency is maintained.

The Refinery installed real-time analyzers to aid in identifying the source of the elevated emissions at PA-01, PA-01.3, PA-06.5 and PA-07 because they are the sample locations that consistently exceed the action limit.

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All four real-time analyzers were placed in service between June 2021 and August 2021. At each of the locations, there is also the potential for an off-site contributor to influence fenceline compliance. Four additional real-time analyzers are being purchased to provide early detection at recent elevated sample points.

The Refinery is using a consultant to evaluate and prepare a Site-Specific Monitoring Plan (SSMP) using the data from the real-time gas chromatograph analyzers. The consultant requires 4 weeks to evaluate the best SSMP option. Once the SSMP has been developed, it can take up to 90 days for the EPA to approve or deny. If the plan gets rejected with revisions and the plan needs to be re-submitted, it can be up to another 90 days for approval. Thus, the SSMP the new tentative implementation date is December 31, 2022.

Sampler Station PA-01.6

PA-01.6 is in close proximity to the Refinery's marine vessel loading operations at Dock 1. This area is referred to as the Dock and includes Tank 926 and the benzene thermal oxidizer EPN 22TK926FLR.

PA-01.6 had a sample result that was above $9.0 \mu\text{g}/\text{m}^3$ during the Second Quarter 2022 Reporting Period during the sample period of May 9, 2022 to May 24, 2022 that was associated with annual dock testing at Dock 1 between on May 11, May 12, May 16 and May 17, 2022. In response to the elevated sample result, the Refinery chartered an investigation team made up of operations, industrial hygienist, maintenance, safety, turnaround group and environmental to review maintenance job planning, equipment preparation for maintenance (clearing and line breaks) and the associated work permits for each phase of the job. The investigation is tentatively scheduled to be complete by September 30, 2022.

One of the four additional real-time analyzers will be located at PA-01.6 to allow for quick identification of the source of benzene emissions.

The temporary samplers installed around the Dock area, the handheld analyzers used during potential events, and the current real-time analyzers all continue to allow for the identification and implementation of corrective actions with potential off-site sources proximate to the Dock area, the Tank 926 benzene thermal oxidizer, and/or leaks from associated tanks and piping in the vicinity.

Sampler Station PA-06.5

PA-06.5 sampler is located at the fenceline that separates the Total Refinery and another industrial facility.

PA-06.5 had sample results that were above $9.0 \mu\text{g}/\text{m}^3$ during the Second Quarter 2022 Reporting Period during the sample periods of May 9, 2022 to May 24, 2022 and June 6, 2022 to June 20, 2022.

Based on the wind direction, it is believed that the elevated readings during the May 9, 2022 to May 24, 2022 sampling period were due to Tank 482 maintenance emissions in preparation for the scheduled maintenance and inspection. Resources from the Environmental, Operations, Technical and the Tank Maintenance group are evaluating options to prevent reoccurrence with other tanks near the fenceline.

Based on the wind direction, it is believed that the elevated readings during the June 6, 2022 to June 20, 2022 sampling period were due to emissions from the Ethane Cracker Unit. TotalEnergies will be

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meeting with the Ethane Cracker Unit personnel during the week of September 5, 2022 to discuss and evaluate the protocol for identifying potential sources (equipment/activities) when there are hits on the real-time analyzers at the fenceline.

The temporary samplers installed around this area, the handheld analyzer used during potential events, and the real-time analyzers indicate that the elevated sample results are associated with the benzene thermal oxidizer and its associated tanks/piping in the approximate area, the BTP Facility and/or the associated VOC Storage Tanks 805/807 that both store Off-Spec Pygas.

Sampler Stations PA-14 and PA-15

PA-14 and PA-15 are located at the north end of the site. During the Second Quarter 2022 reporting period, there were two (2) elevated sample results at each sampler station.

PA-14 had a sample results that were above $9.0 \mu\text{g}/\text{m}^3$ during the sample period of April 11, 2022 to April 26, 2022 and May 9, 2022 to May 24, 2022. This is the first exceedance at PA-14. The elevated readings were due to a VOC leak into the FPM Cooling Tower (67FPMCLTWR) due to two Crude heat exchangers tube leaks.

PA-15 had sample results that were above $9.0 \mu\text{g}/\text{m}^3$ during the sample period of April 11, 2022 to April 26, 2022 and April 26, 2022 to May 9, 2022. The elevated readings were also due to the VOC leak into the FPM Cooling Tower (67FPMCLTWR) due to two Crude heat exchangers tube leaks. To address the leak, process changes were made until the leak could be addressed. Both exchangers were removed from service on June 23, 2022 and spare exchangers with new tubes were installed and put back in service on June 25, 2022. The exchanger leak was due to an unforeseen, sudden, infrequent failure that could not have been prevented through the exercise of good engineering practice. The Crude Unit was shutdown in September 2021 and the new tube bundles were installed during that turnaround. The tubes are being analyzed to determine the cause of the cause of failure and a report will be issued as part of the RCFA that is being conducted for the exchanger leak.

One of the four additional real-time analyzers will be located between PA-14 and PA-15 to allow for quick identification of the source of benzene emissions.

INITIAL CORRECTIVE ACTIONS (WITH DATES)

1. Meeting the Regional TCEQ Air Section Manager to discuss the benzene thermal oxidizer technical performance study. **Completion Date: April 21, 2020. Complete.**
2. Submit an Audit Privilege for the technical performance study on the benzene thermal oxidizers. **Completion Date: April 24, 2020. Complete.**
3. Conduct a technical performance study to determine destruction efficiency of the benzene thermal oxidizers impacting the Sampler Stations PA-01 and PA-06.5. **Completion Date: May 29, 2020. Complete.**

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The technical performance study was conducted beginning April 27, 2020 and ending May 5, 2020. The final performance study report has been received.

4. After receiving the performance study report, determine and perform the necessary maintenance to address deficiencies found as a result of the technical performance study on each of the benzene thermal oxidizers. **Completion Date: August 15, 2020. Complete.**
5. Submit the Audit disclosures for the benzene thermal oxidizers. Due to hurricanes and the BTP turnaround, Total submitted extension request and received approval on November 23, 2020. **Completion Date: ~~October 23, 2020~~. Extended until April 26, 2021. Complete.**
6. Once the necessary maintenance has been performed on each of the benzene thermal oxidizers impacting sampler stations PA-01 and PA-06.5, conduct a second technical performance study to determine destruction efficiency improvements. **~~Completion Date: September 30, 2020. New Completion Date: November 30, 2020.~~ Extended to due to Hurricane Laura/Delta and the shutdown of the Refinery and the BTP. Completion Date: January 31, 2021. Complete.**

The last technical study was completed on Thursday, January 28, 2021. Reports have been received.

7. Evaluate the impact of adjacent BTP Plant and the associated storage tanks on benzene fenceline compliance at sampler stations located between BTP Plant and TOTAL. **Completion Date: October 31, 2020. Complete.**
8. Review vacuum truck procedures to ensure control devices emissions will not impact the fenceline samples when used for clearing sumps, piping and equipment near fenceline. **Completion Date: ~~October 31, 2020~~. Extended until January 31, 2021. Complete.**

The vacuum truck procedure will be revised and routed for authorization with the updates resulting from the review.

9. Schedule Callidus/UOP (Thermal Oxidizer Vendor) for a site visit to perform inspection all three thermal oxidizers and make performance improvement recommendations. **Completion Date: January 31, 2021. Complete.**

Callidus Technologies performed a site inspection on December 14, 2020. The preliminary report with recommendations to improve the destruction efficiency of the thermal oxidizers was received by the Refinery on December 15, 2020.

10. Order two portable hand-held analyzers that can measure benzene in the parts per billion in real-time. **Completion Date: December 15, 2020. Complete.**

Analyzers were received and are being used to detect any potential impact due to process incidents.

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11. Implement the recommendations from the Callidus Technologies site inspection to optimize the destruction efficiency of the benzene thermal oxidizers before performing the technical stack tests.
Completion Date: January 18, 2021. Complete.
12. Temporarily remove Tank 807 from service and determine impact on fenceline compliance.
Completion Date: December 2021. Complete.
13. Install real-time analyzer to help determine the source of the elevated benzene that results in exceeding fenceline action limit. **Completion Date: June 30, 2021. Complete.**
14. Purchase 3 additional real-time analyzer to help determine the source of the elevated benzene that results in exceedance at Sample Stations PA 01, PA-01.3 and PA-07. **Completion Date: August 31, 2021. Complete.**
15. Install temperature indication in the stack of each vapor combustor unit to monitor performance.
Completion Date: September 30, 2021. Complete.
16. Route Tank 807 emissions to a temporary thermal oxidizer to remove the potential impact to the fenceline until a permanent emission control device has been installed and put in service. **Completion Date: December 31, 2021. Complete.**
17. Evaluate and implement a project to permanently route emissions from Tank 807 (and Tank 805) to an emission control device. **Completion Date: TBD.**
Project team is evaluating options for a permanent solution.
18. Evaluate real-time data then develop and get EPA approval for a Site-Specific Monitoring Plan (SSMP).
Completion Date: ~~June 30, 2022.~~ December 31, 2022.
19. Once Tank 807 with temporary thermal oxidizer is placed in service, remove Tank 805 from service until emission controls are put in place to eliminate its impact to the fenceline. **Completion Date: November 30, 2021. Complete.**
20. Evaluate and implement project to ensure combustion inlet air flow is adequate for all tank conditions (static, foiling and emptying). **Completion Date: December 31, 2021. Complete.**
21. Scope and implement corrective action to ensure adequate nitrogen supply to Tank 926 and it's associated TO. **Completion Date: February 28, 2022. Complete.**
22. Investigate potential off-site sources that could have contributed to the elevated sample result during the sample period of March 14, 2022 to March 28, 2022. **Completion Date: June 30, 2022. Complete.**

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23. Conduct formal stack tests for the three thermal oxidizers. **Completion date: September 30, 2022.**
Environmental is working with stack testing vendor to prepare to conduct formal testing on the three thermal oxidizers now that nitrogen supply to Tank 926 and it's associated TO have been addressed for both loading and unloading Tank 926.
24. Scope and implement corrective action to ensure adequate nitrogen supply to Tank 926 and it's associated TO when transferring into loading a barge. **Completion Date: August 10, 2022. Complete.**
25. Conduct an RCFA on the Crude Unit exchanger leak that resulted in elevated results at sample Stations PA-14 and PA-15. **Completion Date: October 31, 2022.**
26. Refinery has chartered an investigation team made up of operations, industrial hygienist, maintenance, safety, turnaround group and environmental to review maintenance job planning, equipment preparation for maintenance (clearing and line breaks) and the associated work permits for each phase of the job. **The investigation is tentatively scheduled to be complete by September 30, 2022.**
27. Purchase four (4) additional real-time analyzers that will be located on the fenceline at sample stations that have had recent elevated results. **Completion Date: October 31, 2022.**
28. Purchase two (2) additional portable hand-held analyzers. **Completion Date: October 31, 2022.**
29. TotalEnergies will meet with the Ethane Cracker Unit personnel to discuss and evaluate protocol for looking potential sources (equipment/activities) when there are hits on the real-time analyzers at the fenceline. **Completion Date: October 31, 2022.**
30. TotalEnergies will meet with the BTP personnel to discuss and evaluate protocol for looking potential sources (equipment/activities) when there are hits on the real-time analyzers at the fenceline. **Completion Date: October 31, 2022.**
31. Resources from the Environmental, Operations, Technical and the Tank Maintenance group are evaluating options to prevent elevated emissions due to tank maintenance and emissions. **Completion Date: December 31, 2022.**

Appendix 7

Closing Conference Sign-In Sheet

Exit interview / Out-briefing Meeting

Commenced meeting.....

Time: 12:00

Name	Title	Representing	Telephone No.
Nicholas Bobbs	Inspector	EPA	202-564-0726
Mike Miller	Tech Spec	TCEQ	512-234-0516
Alexia Scott	Investigator	ERG	919-468-7784
Elizabeth Hubbard	Investigator	ERG	919-468-7784
Sarah Frey	Inspector	EPA RL	214-665-6499
Jeanette Morrell	Investigator	TCEQ	409-898-3838
Isaac Banko / o	Environmental Supnt.	TOTAL ENERGIES	409 985 0446
Tommy Chavez	General Manager	Total Energies	409 985 0478
Trena Framming	Environmental	Total Energies	—
Emmanuel PINEAU	Mgr. Planning & Economics	TOTAL ENERGIES	409 985 0206
Paul Simmons	Mgr. Partners in Excellence	Total Energies	409 985 0061
Carl Boyd	OM&S Process Supervisor	Total Energies	409 985 0117
Amy Gerst	Manager - HSE	RPA	281-884-7233
Karma Thomson	VP, HSE & INV	RPA TTE	346 217-0294
Stella Pulman		TOTAL Energies	
Hugh Campbell		11	
Bill Ellis		11	
Alexander De Meys		4	

Chris Kocac

4

Conclude meeting.....

Time: _____

Arvin Paul

Total Energies

Ahmed Belghamiz / Date: _____

11

Caitlin Hernandez

11

Daniel Bonetto

Jamil Lee EPA