



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
New England Regional Laboratory
Laboratory Services and Applied Science Division
11 Technology Drive, North Chelmsford, MA 01863

Report Memorandum

Date: August 4, 2021

Subject: Monitoring Observation Report- Exxon Mobil Providence (Exxon)

From: Tyler Kotsifas, Student Trainee /TLK/
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Through: Jerry Keefe, Team Leader /JCK/
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To: Christine Sansevero, Air Technical Chief
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Facility Information

- A. Facility Name: Exxon Mobil
- B. Facility Location: 1001 Wampanoag Trail East Providence, Rhode Island 02915
- C. Facility Contact: Don Smith
- D. ICIS-Air #: RI0000004400700016

Background Information

- A. Date of test: July 13, 2021
- B. US EPA Representative: Tyler Kotsifas, William Osbahr, Alysha Murphy, Luke Hullinger, and Darren Fortescue

Disclaimer

Unless otherwise noted, this report describes conditions at the facility/property as observed by EPA inspector(s), and/or through records provided to and/or information reported to EPA inspector(s) by facility representatives and as understood by the inspector(s). This report may

not capture all operations or activities ongoing at the time of the inspection. This report does not make final determinations on potential areas of concern. Nothing in this report affects EPA's authorities under federal statutes and regulations to pursue further investigation or action.

Attendees

Luke Hullinger	Environmental Engineer	US EPA (ECAD)
Darren Fortescue	Environmental Engineer	US EPA (ECAD)
Bill Osbahr	Environmental Engineer	US EPA (FSB)
Alysha Murphy	Physical Scientist	US EPA (FSB)
Tyler Kotsifas	Student Trainee	US EPA (FSB)
Don Smith	Sr. Air Advisor	ExxonMobil
Dean Gockel	Superintendent	ExxonMobil
John Andrade	Supervisor	ExxonMobil
Dave Correia	Terminal Foreman	ExxonMobil
Tom Henderson	Senior Project Manager	Roux Associates Inc.
Anthony Marsocci	Lead Technician	Roux Associates Inc.
Jim Gumbley	Fire Marshall	Rhode Island Fire Department
Dave DiMaio	Fire Marshall	Rhode Island Fire Department
Brian Poland	Fire Marshall	East Providence Fire Department
Tom Salisbury	Fire Marshall	East Providence Fire Department

Background:

The purpose of this memorandum is to provide a summary of FSB Team's observations during the monitoring event at Exxon.

The testing is part of a formal request for information under Section 114 (a)(1) of the Clean Air Act.

Concentration of Volatile Organic Compound (VOC) vapors present in the headspace of the gasoline storage tanks were measured in units of percentage of the Lower Explosive Limit (LEL) of gasoline. Roux Associates (Roux) was onsite to provide monitoring. EPA Region 1 personnel were onsite to provide regulatory oversight of the VOC/LEL monitoring event.

Six tanks were monitored by Roux Associates Inc. (Roux), a consultant of Exxon. Below is a list of the tanks. The monitoring of tanks 204 and 207 were not observed by US EPA:

1. Tank 201
2. Tank 203
3. Tank 204
4. Tank 205
5. Tank 206

6. Tank 207

Observations:

US EPA representatives arrived at the facility at 8:00 am. An opening conference was conducted with ExxonMobil and Rhode Island Fire Department personnel. A list of attendees was recorded which is the same as listed above.

Mr. Marsocci of Roux was the primary sampling system operator. He operated a QRAE 3 PGM 2500 analyzer for monitoring. The monitoring and pre and post analyzer calibration activities were witnessed by the US EPA field team. Calibrations were performed as outlined in the 114 reporting requirement. A zero and upscale calibration was performed before monitoring a tank and again after completing the 40 minute monitoring of the tank. A zero gas and a 50% LEL gas (as Methane) was used.

Roux performed a response time check of the sampling system prior to commencing sampling. Response time was observed to be 57 seconds.

Methane was used as calibration gas in a nominal 2.5% level.

The sampling line consisted of sixty feet of tygon tubing and was configured to maintain a collection inlet within 3 feet of the internal floating roof inside the tanks.

Tank Monitoring Field Activities

Mr. Marsocci performed head space analysis on each tank for approximately 35 to 40 minutes. Monitoring requirements were outlined in the EPA reporting requirement submitted to Exxon from ECAD.

Mr. Marsocci utilized the QRAE 3's data storage capacity to develop tank headspace monitoring data for later retrieval and analysis.

Inspector Osbahr used a Forward Looking Infrared (FLIR) camera to monitor gases for Tanks 201, 202, 203, 204, 206, and 207. No fugitive emissions were observed by Inspector Osbahr with a FLIR GF 320 camera.

Tank head space monitoring data, available at the time of the event, is summarized below. US EPA personnel were only present for the monitoring of Tanks 201, 202, 203, and 206 and not for Tanks 204 or 207, Tanks 204 and 207 were monitored by Roux after US EPA left the facility.

Tank 206 Monitoring Data

EPA Gasoline Storage Tank %LEL Monitoring Inspection Checklist		Monitoring Date:		7/13/2021					
1. Facility									
Facility Name:	Exxon Mobil								
Facility Address:	1001 Wampanoag Trail			Town:	East Providence	State:	RI	Zip:	2915
Attendees:	Name	Company		Role					
2. Environmental Conditions									
	Forecast Ambient Temperature (°F):			Forecast Windspeed (mph):					
	Actual Ambient Temperature (°F):	69.7		Actual Windspeed (mph):	4.7				
3. Tank Data									
	Tank Identifier:	206		Tank Fill Level (ft):	21.09				
	Product in the Tank:	Premium Gas		Monitoring Location:	Roof Hatch				
4. System Calibration									
	Multigas Monitor Manufacturer:	RAE Systems PGM 2500 QRAE 3		Model No.:					
	Is the monitor capable of recording data in 15 second intervals?:	Yes							
	Does the monitor have the capacity to sample through sample tubing used?:	Yes							
	Does the monitor have published correction factors for gasoline?:	Yes							
	Is the monitor set to record data as methane?:	Yes							
	Sample Line Length (ft):	60		Are calibrations conducted through the sample line?:	Yes				
	Is a demand regulator being used during calibration?:	Yes							
	Were pre-monitor calibrations checks successfully performed?:	Yes		Response Time (sec):	57.31 seconds				
5. Monitoring									
	Start time of sampling:	10:11		End time of sampling:	10:51				
6. Post Monitoring									
	Were post-monitoring calibration checks successfully performed?:	Yes		Version 1.03; July 6, 2021					
	Note: Calibration drift check was biased high by 19%								
	%LEL set point value for calibration was 50%, analyzer read 69%								

Tank 205 Monitoring Data

EPA Gasoline Storage Tank %LEL Monitoring Inspection Checklist		Monitoring Date:		7/13/2021					
1. Facility									
Facility Name:		ExxonMobil							
Facility Address:		1001 Wampanoag Trail		Town:		East Providence		State: RI Zip: 2915	
Attendees:		Name		Company		Role			
2. Environmental Conditions									
		Forecast Ambient Temperature (°F):				Forecast Windspeed (mph):			
		Actual Ambient Temperature (°F):		70.1		Actual Windspeed (mph):		7.2	
3. Tank Data									
		Tank Identifier:		205		Tank Fill Level (ft):		10.64	
		Product in the Tank:		Premium Gas		Monitoring Location:		Roof Hatch	
4. System Calibration									
		Multigas Monitor Manufacturer:		RAE Systems PGM 2500 QRAE 3		Model No.:			
		Is the monitor capable of recording data in 15 second intervals?:		Yes					
		Does the monitor have the capacity to sample through sample tubing used?:		Yes					
		Does the monitor have published correction factors for gasoline?:		Yes					
		Is the monitor set to record data as methane?:		Yes					
		Sample Line Length (ft):		60		Are calibrations conducted through the sample line?:		Yes	
		Is a demand regulator being used during calibration?:		Yes					
		Were pre-monitor calibrations checks successfully performed?:		Yes		Response Time (sec):		57.31 seconds	
5. Monitoring									
		Start time of sampling:		11:15		End time of sampling:		11:50	
6. Post Monitoring									
		Were post-monitoring calibration checks successfully performed?:		Yes				Version 1.03; July 6, 2021	
		Calibration drift check was biased high by 20%							
		% LEL set point value for calibration was 50%, analyzer read 70%							

Post monitoring calibration was observed by EPA. Results were biased high by 20% LEL. Analyzer read 70% LEL post calibration. Set point for calibration is 50% LEL.

Tank 203 Monitoring Data

EPA Gasoline Storage Tank %LEL Monitoring Inspection Checklist		Monitoring Date:		7/13/2021					
1. Facility									
Facility Name:	ExxonMobil								
Facility Address:	1001 Wampanoag Trail			Town:	East Providence	State:	RI	Zip:	2915
Attendees:	Name	Company		Role					
2. Environmental Conditions									
	Forecast Ambient Temperature (°F):					Forecast Windspeed (mph):			
	Actual Ambient Temperature (°F):			72.3		Actual Windspeed (mph):		4.3	
3. Tank Data									
	Tank Identifier:			203		Tank Fill Level (ft):		38.65	
	Product in the Tank:			Regular Gas		Monitoring Location:		Roof Hatch	
4. System Calibration									
	Multigas Monitor Manufacturer:			RAE Systems PGM 2500 QRAE 3		Model No.:			
	Is the monitor capable of recording data in 15 second intervals?:			Yes					
	Does the monitor have the capacity to sample through sample tubing used?:			Yes					
	Does the monitor have published correction factors for gasoline?:			Yes					
	Is the monitor set to record data as methane?:			Yes					
	Sample Line Length (ft):			60		Are calibrations conducted through the sample line?:		Yes	
	Is a demand regulator being used during calibration?:			Yes					
	Were pre-monitor calibrations checks successfully performed?:			Yes		Response Time (sec):		57.31 seconds	
5. Monitoring									
	Start time of sampling:			12:21		End time of sampling:		1:01	
6. Post Monitoring									
	Were post-monitoring calibration checks successfully performed?:			Yes				Version 1.03; July 6, 2021	
	Monitor was recalibrated before testing this tank								
	Post calibration drift check improved								
	Post calibration drift check was 49.51 % LEL								
	% LEL set point value for calibration was 50%								

Tank 201 Monitoring Data

EPA Gasoline Storage Tank %LEL Monitoring Inspection Checklist		Monitoring Date:		7/13/2021					
1. Facility									
Facility Name:		ExxonMobil							
Facility Address:		1001 Wampanoag Trail		Town:		East Providence		State: RI Zip: 2915	
Attendees:		Name		Company		Role			
2. Environmental Conditions									
		Forecast Ambient Temperature (°F):				Forecast Windspeed (mph):			
		Actual Ambient Temperature (°F):		73.8		Actual Windspeed (mph):		4.3	
3. Tank Data									
		Tank Identifier:		201		Tank Fill Level (ft):		41.3	
		Product in the Tank:		Regular Gas		Monitoring Location:		Roof Hatch	
4. System Calibration									
		Multigas Monitor Manufacturer:		RAE Systems PGM 2500 QRAE 3		Model No.:			
		Is the monitor capable of recording data in 15 second intervals?:		Yes					
		Does the monitor have the capacity to sample through sample tubing used?:		Yes					
		Does the monitor have published correction factors for gasoline?:		Yes					
		Is the monitor set to record data as methane?:		Yes					
		Sample Line Length (ft):		60		Are calibrations conducted through the sample line?:		Yes	
		Is a demand regulator being used during calibration?:		Yes					
		Were pre-monitor calibrations checks successfully performed?:		Yes		Response Time (sec):		57.31 seconds	
5. Monitoring									
		Start time of sampling:		2:09		End time of sampling:		2:49	
6. Post Monitoring									
		Were post-monitoring calibration checks successfully performed?:		Yes				Version 1.03; July 6, 2021	
		Post calibration drift check was 53%							
		% LEL set point value for calibration was 50%							

-Data for Tanks 204 and 207 will be received in the final report from the facility.

Monitoring Anomalies

Post calibration of the QRAE after the monitoring of Tank 206 yielded a high bias for the sampling system. For the 50% LEL calibration gas, the sample system read 69% LEL during the post calibration. Throughout the 40 minute monitoring run, the head space above the tank roof remained at or close to 0% LEL as recorded by the QRAE. It was agreed to allow them to continue on with monitoring of Tank 205 to see whether the high bias is consistent.

Post calibration of the QRAE after the monitoring of Tank 205 again yielded a high bias for the sampling system. For the 50% LEL calibration gas, the sample system read 70% LEL during the post calibration. Throughout the 40 minute monitoring run, the head space above the tank roof remained at or close to 0% LEL as recorded by the QRAE.

After a discussion between Exxon, Roux and EPA, it was decided that the suspected cause of such calibration anomalies may have been due to the analyzer not being allowed to warm up long enough during the initial calibration of the system. After discovering the post calibration issues associated with Tank 206 and Tank 205, Mr. Marsocci performed a re-span and re-zero of the sampling system. The subsequent post tank monitoring calibrations of the sampling system yielded more representative calibrations for the 50% LEL calibration gases.