
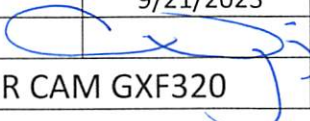


## USEPA – Region II

	<b>Regional Hearing Clerk</b> Operations Department	Procedure number:	POC-
		Revision number:	
		Revision date:	9/21/2023
Procedure Owner:	Wilfredo Sierra	Approved by:	
<b>GAS LEAK DETECTION AND MEASUREMENT PROGRAM USING FLIR CAM GFX320</b>			

**1. PURPOSE**

This program aims to detect and measure gas leaks in components and equipment such as storage tanks, pipelines, valves, gas flare system and other components containing volatile products including gasoline. These inspections will be performed using the FLIR Cam GFX320 model.

**2. OBJECTIVE**

The gas leak detection and measurement program is key for detecting gas leaks that could pose risks to the health and safety of personnel and to the terminal facility. As a company policy, Peerless Oil & Chemicals, Inc. ("POC") aims to comply with EPA requirements to protect the environment and personnel during our operations.

**3. SCOPE**


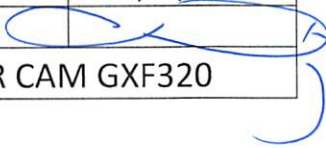
This procedure applies to all personnel, equipment and operations related to Gas Leak inspections. Any personnel involved in any area of the Gas Leak Detection and Measurement Program must comply with the rules, standards, regulations and processes established in this procedure. Personnel who will act as Gas Leak Inspectors using the FLIR equipment must have the required training and certifications.

**4. REFERENCES**

- 4.1. FLIR GFX320 User Manual
- 4.2. FLIR QL320 User Manual
- 4.3. This procedure is consistent with 40 C.F.R. Part 63, Subpart R, and other EPA settlement agreements that include requirements for tank monitoring with an IR camera and any necessary corrective actions.

**5. EQUIPMENT OVERVIEW****5.1. FLIR GFX320:**

- 5.1.1. The FLIR GFx320 is an infrared camera capable of detecting methane emissions or other volatile organic compounds ("VOCs"). It can detect even minor gas emissions and will quickly and effectively survey critical zones.
- 5.1.2. The GFx320 has third-party certifications for use in hazardous areas, allowing for quick leak detection while maintaining safety.
- 5.1.3. The GFx320 visualizes small hydrocarbon leaks with the sensitivity needed to meet the U.S. EPA's methane rule.

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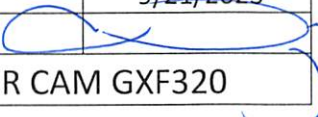
## 5.2. FLIR QL320:

- 5.2.1. Portable computer used to quantify optical images of leaks in order to measure and obtain results of different parameters.
- 5.2.2. Is a quantitative optical gas imaging (“OGI”) system designed specifically for use with the FLIR GFx320 and the FLIR GF320 OGI cameras.
- 5.2.3. This system allows surveyors to measure the leak concentrations for methane and other hydrocarbons.

## 6.0 DEFINITIONS

- 6.1 Anemometer: Instrument to measure wind speed.
- 6.2 Range finder: Instrument to measure the distance from the instrument to a selected point or object.
- 6.3 Gas monitor: is a device that detects the presence of gases in an area, often as part of a safety system. The device displays oxygen and gas emission readings in the area in order to identify if it is safe for personnel.
- 6.4 Gas leak: refers to an unintended leak of gaseous product from a pipeline or other containment into any area where the gas should not be present.
- 6.5 Vapor: is a substance produced by some liquids; part of the liquid diffuses into the air, retains some of the properties of the original liquid, and becomes flammable. Gasoline produces vapor at a very low temperature, -40° Fahrenheit, which is known as its flashpoint.
- 6.6 Pipeline - a line of pipes with pumps, valves, and control devices for conveying liquids.
- 6.7 Pipeline Valve - mainly consist of ball valves, gate valves, check valves or plug valves. Pipeline Valves are installed at intervals along pipelines and can be closed to stop the flow of the product.
- 6.8 Shore tank: a shoreside storage tank for liquid petroleum products discharged by tankers.
- 6.9 IFR: Internal floating roof tank is a floating roof storage tank which is covered with a fixed roof on the floating roof, which can protect the tank from exposure to wind and rain, preserving the quality of stored product under the floating roof.
- 6.10 EFR: External floating roof tank it is an open top floating roof tank without a vault, there is an external floating roof in it, which can float on the product and adjust vertically up and down.



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## 7.0 RESPONSIBILITIES

### 7.1 Terminal manager

- 7.1.1 Responsible for managing and overseeing all operations associated with this procedure.
- 7.1.2 Assign tasks and responsibilities to the personnel in charge of performing the inspections and reports associated with this procedure.

### 7.2 Environmental Coordinator

- 7.2.1 Must ensure that POC is in compliance with environmental agencies' regulations and standards related to pollution/emissions.
- 7.2.2 Is in charge of evaluating, planning and implementing any work related to compliance with environmental regulations.
- 7.2.3 Must ensure that the inspections and processes related to this procedure are in compliance with the applicable environmental regulations and standards required by the agencies.


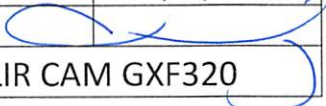
### 7.3 Gas leak inspector

- 7.3.1 In charge of performing the inspections and reports of any gas leak or emissions associated with this procedure.
- 7.3.2 Must complete an Optical Gas Imaging Thermography Certification to manage and perform inspections using the FLIR Cam equipment.
- 7.3.3 Is responsible for performing and keeping records of tests, inspections and maintenance of the FLIR equipment.

## 8.0 CALIBRATION AND TEST

8.1 The following inspections must be performed as specified in the terminal's operation procedures, agencies' standards and regulations and/or the equipment user manual:

- 8.1.1 Gas monitors must be calibrated and certified annually.
- 8.1.2 A Gas monitor "Bump Test" must be performed daily or before any monitoring to confirm that it is working within established parameters.
- 8.1.3 The FLIR Cam does not require annual calibration. The manufacturer recommends to perform calibration and preventive maintenance for the equipment every five years.

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## 9.0 SAFETY, HEALTH AND ENVIRONMENTAL CONSIDERATIONS

9.1 The person(s) involved in a Gas Leak Inspection must be familiar with the product(s) being handled, and wear the necessary safety equipment to protect them self from any hazardous materials. When in doubt, refer to the Safety Data Sheets (“SDS”) Manual. Only certified personnel will perform Gas Leak inspections.

9.2 The inspector must stand upwind when opening a gauge hatch from a storage tank. He must avoid breathing vapors that come from the tank. After the inspection is finished, the hatch must be closed off.

9.3 Do not allow product to come in contact with the eyes, skin, etc. If this happens, wash the affected area with fresh water. If more than water is needed, seek medical assistance.

9.4 Any leak detected or suspected must be reported to the Terminal Manager and the Environmental Officer.

9.5 For any inspection to be conducted, the inspector must use devices that comply with the standards of Intrinsically Safe equipment to be used for operations in hazardous areas.

## 10.0 PRIOR TO CONDUCTING GAS LEAK INSPECTIONS

10.1 Identify the area and components to be inspected.

10.2 Identify the required personal protective equipment needed to perform the inspection in the desired area and components.

10.3 A work permit must be submitted in order to guarantee that the area and components to be inspected are safe for the inspector and the operation, and that terminal personnel are aware that the inspection will be carried out in that area.

10.4 The inspector must verify the equipment to be used and confirm that the devices are working properly, the battery is charged, and the state of the equipment is in good condition.

10.5 The transfer of the equipment to the area to be inspected must be done carefully, ensuring the integrity of the equipment.


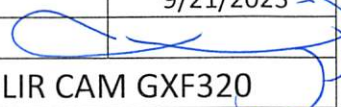
## 11.0 CONDUCTING THE GAS LEAK INSPECTION

### 11.1 General Details

11.1.1 Stand in a safe area where the target to be inspected can be seen.

11.1.2 Proceed to take readings of the parameters required for the inspection, which are:



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11.1.2.1 Environmental temperature.

11.1.2.2 Wind speed and direction.

11.1.2.3 Distance between the inspection device and the objective to be inspected.

11.1.3 Write down all the information on the inspection form.

11.1.4 Proceed to adjust the parameters of the FLIR GFX320 to be able to capture the optical images.

11.1.5 Upon detecting a gas leak, proceed to take a video of the leak. The video must last between 15 - 30 seconds and the required information must be written on the inspection form. (This step will be repeated for each target to be inspected).

11.1.6 Once the inspection is completed, proceed to leave the area safely.

## 11.2 Shore Tanks Inspection

11.2.1 The inspector will ensure that all Infrared Camera Inspections conducted are performed in accordance with the checklist developed by POC with the following requirements:


11.2.1.1 The infrared gas imaging camera must be capable of imaging organic gases that absorb infrared light in approximately the 3.2-to-3.4-micron range and have an automatic mode (for thermal contrast and brightness) for all Infrared Camera Inspections.

11.2.1.2 All Infrared Camera Inspections will be conducted in automatic mode and in gray scale.

11.2.1.3 For all tank inspections (IFR and EFR), the inspector will select the polarity in order to achieve the maximum contrast of the VOCs with the sky background condition.

11.2.1.4 All Infrared Camera Inspections for IFR tanks will be conducted from ground level at no greater than fifty (50) feet from the tank perimeter roof vents, and inspector will image all tank perimeter roof vents.

11.2.1.5 All Infrared Camera Inspections for EFR tanks will be conducted from the tank's top platform when the tank is at least 50% full whenever possible. The EFR

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inspections will include a survey of all EFR components that are potential sources of emissions, including, but not limited to, rim seals, vacuum breakers, roof legs, and access hatches.

11.2.1.6 The inspector will conduct all Infrared Camera Inspections only when the tanks are idle (neither filling nor being drawn down).

11.2.1.7 All Infrared Camera Inspections will be conducted only at times when the wind speed is forecasted to be greater than 5 mph and less than 15 mph.

## **12.0 AFTER CONDUCTING THE GAS LEAK INSPECTION**

- 12.1 Secure and store the equipment according to its operating manuals.
- 12.2 Analyze and discuss the findings, leaks, images and reports generated in the inspection.
- 12.3 Store images and reports in their respective databases.
- 12.4 Clean, inspect and store all equipment in their respective places.
- 12.5 If necessary and if applicable, generate a Work Order to correct leaks on the inspected components.