

**RULE 331. FUGITIVE EMISSIONS INSPECTION AND MAINTENANCE. (Adopted 6/11/1979, revised 7/11/1989 and 12/10/1991)**

**A. Applicability**

This Rule shall apply to components in liquid or gaseous hydrocarbon service at refineries, chemical plants, oil and gas production fields, oil and gas processing plants, and pipeline transfer stations.

**B. Exemptions**

1. Exemptions shall be applied for in writing to the Control Officer.
2. The provisions of this Rule shall not apply to:
  - a) components exclusively handling natural gas,
  - b) components buried below ground,
  - c) one-half inch and smaller stainless steel tube fittings which have been determined to be leak-free by the Control Officer based on an initial inspection in accordance with Section H.1.
3. The provisions of Sections F.1, F.2, F.3 and F.7 of this Rule shall not apply to:
  - a) components exclusively in heavy liquid service,
  - b) components, except components within gas processing plants, exclusively handling liquid and gaseous process fluids with an ROC concentration of 10 percent or less by weight, as determined according to test methods specified in Section H.2,
  - c) components totally contained or enclosed such that there are no ROC emissions into the atmosphere,
  - d) components incorporated in lines operating exclusively under negative pressures.
  - e) any control valve actuation system, except those used in pressure relief valves and stuffing boxes, which uses gas pressure to open or close the valve and which releases gas to the atmosphere during this process, and for which the Control Officer has determined on a case-by-case basis that no alternate valve design can be feasibly used.
4. The provisions of Sections F.1, F.2, and F.7 of this rule shall not apply to components that are unsafe to monitor, as documented and established in a safety manual or policy, and with the prior written approval of the Control Officer.

**C. Definitions**

For purposes of this Rule, the following definitions shall apply. Definitions which apply to multiple rules are located in Rule 102 (Definitions):

1. **"Background"** means the reading expressed as methane on a portable hydrocarbon detection instrument which is taken at least three meters upwind from any components to be inspected and which is not influenced by any specific emission point.

2. "**Chemical plant**" means any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has 282 as the first three digits in its Standard Industrial Classification Code as defined in the Standard Industrial Classification Manual is included.
3. "**Component**" means any valves, fittings, pumps, compressors, hatches, sight glasses, meters, pressure relief devices, and diaphragms. They are further classified as:
  - a. "**Major component**" means any 4-inch or larger valve, any 5-hp or larger pump, any compressor, and any 4-inch or larger pressure relief device.
  - b. "**Minor component**" means any component which is not a major component.
  - c. "**Critical component**" means any component which would result in the shutdown of the process unit if these components were shut down. These components must be identified by the source and approved by the Control Officer.
4. "**Compressor**" means a device used to compress gases and/or vapors by the addition of energy, and includes all associated components used for connecting and sealing purposes.
5. "**Crude oil production or processing facility**" means any facility engaged in the production or processing of crude oil. This includes all components in liquid or gaseous hydrocarbon service. Any facility or operation that has 1311 as its Standard Industrial Classification Code as defined in the Standard Industrial Classification Manual is included.
6. "**Facility**" means "stationary source", as defined in Rule 102, or for oil and gas production, that portion of the stationary source located on a lease.
7. "**Fitting**" means a component used to attach or connect pipes or piping details including but not limited to flanges and threaded connections.
8. "**Flange**" means a projecting rim on a pipe or piping component used to attach it to another piping detail.
9. "**Fugitive emissions**" means hydrocarbon emissions that are released into the atmosphere from any point other than a stack, chimney, vent or other functionally equivalent opening.
10. "**Gas processing plant**" is a facility engaged in the separation of liquids from field gas and/or fractionation of the liquids into gaseous products, such as ethane, propane, butane, and natural gasoline. Excluded from the definition are compressor stations, dehydration units, sweetening units, field treatment, underground storage facilities, liquefied natural gas units, and field gas gathering systems unless these facilities are located at a gas processing plant.
11. "**Hatch**" means any covered opening system that provides access to a tank or container.
12. "**Heavy liquid service**" means any component which contains or contacts a liquid containing ROC of which 10 percent or less by weight evaporates at 150 degrees centigrade and atmospheric pressure as measured according to test methods in Section H.3.
13. "**Inaccessible**" means any component located over fifteen (15) feet above ground when access is required from the ground, or any component located over six (6) feet away from a platform when access is required from the platform.

14. "**Leak minimization**" means tightening or adjusting of a component for the purpose of stopping or reducing leakage to the atmosphere.
15. "**Liquid leak**" means a visible mist or the dripping of liquid at the rate of more than three drops per minute.
16. "**Major gas leak**" means the detection of total gaseous hydrocarbons in excess of 10,000 ppmv as methane above background measured according to test methods in Section H.1.
17. "**Minor gas leak**" means the detection of total gaseous hydrocarbons in excess of 1,000 ppmv but not more than 10,000 ppmv as methane above background measured according to test methods in Section H.1.
18. "**Natural gas**" means a mixture of gaseous hydrocarbons, with at least 80 percent methane, and less than one percent ROC, on a weight basis, excluding ethane, determined according to test methods specified in Section H.
19. "**Oil and gas production field**" means a facility on which crude petroleum and natural gas production and handling are conducted, as defined in the Standard Industrial Classification Manual as Industry No. 1311, Crude Petroleum and Natural Gas.
20. "**Pipeline transfer station**" means a facility which handles the transfer and/or storage of petroleum products or crude petroleum in pipelines.
21. "**Pressure relief event**" means a release from a pressure relief device resulting when the static upstream pressure reaches the setpoint of the pressure relief device. A pressure relief event is not a leak.
22. "**Pressure relief device**" means a pressure relief valve or a rupture disc.
23. "**Pressure relief valve**" means a valve which is automatically actuated by upstream static pressure, and used for safety or emergency purposes.
24. "**Process unit**" means a manufacturing process which is independent of other processes and is continuous when supplied with a constant feed of raw material and sufficient storage facilities for the final product.
25. "**Process unit shutdown**" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.
26. "**Pump**" means a device used to transport fluids by the addition of energy, and includes all associated components used for connecting or sealing purposes.
27. "**Refinery**" means a facility that processes petroleum, as defined in the Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refinery.
28. "**Reinspection**" means an inspection following the attempted repair of a leak.

29. **"ROC service"** means that the equipment, except at gas processing plants, contains or contacts a liquid or gaseous process fluid that is at least 10 percent ROC by weight. For gas processing plants, ROC service means that the equipment contains or contacts a liquid or gaseous process fluid that is at least 1 percent ROC by weight.
30. **"Repair"** means tightening or adjusting or replacing a component for the purpose of stopping or reducing leakage to the atmosphere.
31. **"Rupture disk"** means the diaphragm held between flanges for the purpose of isolating an ROC from the atmosphere or from a downstream pressure relief valve.
32. **"Stuffing box"** means a packing gland, a chamber, or "box" to hold packing material compressed around a moving pump rod or valve stem by a "follower" to prevent the escape of gas or liquid. For purposes of this rule, stuffing box seals are considered as part of pump seals.
33. **"Valve"** means any device that regulates or isolates the flow of liquids or gases in a piping system by means of an external actuator; including flanges, flange seals, and other components used for attachment or sealing.

**D. Requirements - General**

1. No facility shall exceed the number of leaks specified in Table 1, of Section F.2, for each inspection period for major gas leaks and/or liquid leaks, as determined by District or operator inspection, except as provided in Rule 505.
2. Hatches shall be closed at all times except during sampling, adding process material or attended maintenance operations.
3. Open-ended lines and valves located at the end of lines shall be sealed with a blind flange, plug, cap or a second closed valve, at all times except during operations requiring liquid or gaseous process fluid flow through the open-ended line.
4. Components or component parts which incur five repair actions for major gas or liquid leaks within a continuous twelve-month period shall be replaced with Best Available Control Technology equipment as determined by the District's New Source Review Rule.

**E. Requirements - Repair**

1. No person shall use any component in ROC service if there is a major or minor gas leak or a liquid leak, unless all of the following requirements are satisfied:
  - a. All leaks from components shall be minimized within one hour to stop or reduce leakage to the atmosphere.
  - b. All leaks from critical components shall be minimized within one hour to the extent possible and shall be replaced with Best Available Control Technology (BACT) as determined in accordance with the District's New Source Review Rule during the next process shutdown or within twelve months, whichever is sooner.
  - c. Major gas leaks from noncritical components shall be successfully repaired within 5 calendar days of initial leak detection.

- d. Minor gas leaks from noncritical components shall be successfully repaired within 14 calendar days of initial leak detection.
- e. Liquid leaks from noncritical components shall be repaired within 24 hours of detection.
- f. All noncritical components subject to this Section, where the total gaseous hydrocarbon concentration exceeds 50,000 ppmv (expressed as methane) above background, shall be repaired within 1 calendar day of initial leak detection at onshore facilities, and within 2 calendar days of initial leak detection at offshore facilities, or removed from service until successfully repaired, unless prohibited by California Occupational Safety and Health Administration standards.

**F. Requirements - Inspection**

- 1. Except as provided in F.2 and F.4, each accessible component subject to this Rule shall be inspected by the owner or operator of the facility in accordance with EPA Reference Method 21 at least once each calendar quarter.
- 2. The inspection frequency for accessible components, except pump seals, compressor seals and pressure relief devices, may be conducted annually, provided all of the following conditions are met:
  - a. All components at that facility have been successfully operated and maintained with no major gas or liquid leaks in excess of the leak thresholds specified in Table 1 for five consecutive quarters, and
  - b. The above is substantiated by documentation and submitted to and approved by the Control Officer.
  - c. The annual inspection frequency for all accessible components shall revert to quarterly inspections should the annual inspection or District inspection show major gas or liquid leaks in excess of the leak threshold for any category of components listed in Table 1. The maximum number of leaks in Table 1 shall be rounded upwards to the nearest integer, where required.

**TABLE 1. LEAK THRESHOLDS**

| Component               | Maximum number of Allowable Leaks Per Inspection Period |                          |
|-------------------------|---|--------------------------|
|                         | Components Inspected<br>200 or less                     | over 200                 |
| Valves                  | 1   | 0.5% of number inspected |
| Pump seals              | 2   | 1% of number inspected   |
| Compressors seals       | 1   | 1                        |
| Pressure Relief Devices | 1   | 1                        |
| Other Components        | 1   | 1                        |

3. All inaccessible components shall be inspected annually by the owner or operator according to EPA Reference Method 21. Unsafe to monitor components shall be inspected when this can be done safely.
4. All threaded and flanged connections shall be inspected by the owner or operator according to EPA Reference Method 21 immediately after assembly and annually thereafter.
5. Pressure relief devices shall be inspected by the owner or operator according to EPA Reference Method 21 quarterly and within 3 calendar days after every pressure relief event.
6. Each component subject to this Rule shall be reinspected by the owner or operator according to EPA Reference Method 21 within 30 calendar days after leak minimization or leak repair.
7. Each pump seal, compressor seal, or pressure relief device shall be inspected for leaks once during every eight-hour operating period, except for components at oil or gas production fields and pipeline transfer stations where inspection shall be daily. For purposes of this inspection, a leak shall include any liquid leak, a visual vapor leak, or the presence of bubbles using soap solutions, or the use of a vapor analyzer. If a leak is identified, that pump seal, compressor seal, or pressure relief device shall be inspected with a vapor analyzer within two calendar days of initial leak detection according to EPA Reference Method 21.

**G. Recordkeeping and Reporting**

1. The owner or operator of any facility subject to this rule shall identify all components specified below. The identification system must be approved by the Control Officer for the purposes of inspection, repair, replacement, and recordkeeping:
  - a. All major components and critical components shall be physically identified clearly and visibly. The physical identification shall consist of labels, tags or other system approved by the Control Officer which enables the District or the operator to locate each individual component.

- b. All major components, critical components, unsafe to monitor components and components located in inaccessible areas, except flanges and threaded connections, shall be clearly identified in diagrams as approved by the Control Officer.
    - c. A list of all equipment and components including separate identification of inaccessible, unsafe to monitor, and critical components shall be submitted to the District for approval. The list shall include component identification, location, whether major or minor, usage, and reasons for inaccessible or unsafe to monitor designation.
  2. The owner or operator of any facility subject to this rule shall notify the Control Officer in writing of any changes in the identification of a major component.
  3. All leaking components found during inspection by the owner or operator shall be affixed with highly visible, weatherproof tags showing the date of initial leak detection. All leaking components shall be physically labeled at the time of leak detection with a unique code that is readily identifiable and shall be clearly identified in diagrams specified in Section G.1.b within 30 calendar days of initial leak detection.
  4. The owner or operator of any facility subject to this rule shall maintain an inspection log containing at a minimum the following:
    - a. Name, location, type of components, and description of any unit where leaking components are found.
    - b. Date of leak detection, emission level (ppmv) of leak, date(s) of repair attempt(s) and method of leak detection.
    - c. Date(s) and emission level of reinspection(s) after leak is repaired.
    - d. Total number of components inspected, location, date inspected, and total number and percentage of leaking components found by component types.
    - e. Current record identifying all equipment awaiting repairs.
    - f. Maintenance and calibration records of Organic Vapor Analyzer, including dates and methods of calibration and/or repairs.
  5. The inspection and repair records shall be retained at the facility by the owner or operator for the previous two (2) years and the records shall be made available at the time of District inspection and shall be submitted to the Control Officer upon request.

## **H. Test Methods**

1. Measurement of total gaseous hydrocarbon leak concentration shall be conducted according to EPA Reference Method 21 (40 CFR 60, Appendix A). The analyzer shall be calibrated with methane. If the alternative screening procedure referenced in Method 21 is used and bubbles are observed, the instrument technique specified in Method 21 shall be used within the same working day to determine if a leak exists.
2. The ROC content of fluids shall be determined using ASTM Methods E-168-88, E-169-87, or E-260-85. The Control Officer may approve an alternative test method provided that method is comparable in accuracy to the ASTM Method and has been approved by the ARB and EPA.

3. Determination of evaporated compounds of liquids shall be performed in accordance with ASTM D-86-82.
4. Determination of exempt solvent content shall be performed in accordance with ASTM D-4457-85.

**I. Compliance Schedule**

1. All sources subject to this Rule shall submit to the Control Officer for review and approval a Fugitive Emissions Inspection and Maintenance Plan by June 10, 1992. The plan shall include a description of the identification system required by Section G.1. including the physical identification method required by Section G.1.a., the diagrams required by Section G.1.b, and the component list required by Section G.1.c.

The District review of the Fugitive Emissions Inspection and Maintenance Plan will include an inspection to verify component identification and diagrams and to verify equipment and component lists in accordance with Section G.1.

An updated Fugitive Emissions Inspection and Maintenance Plan must be submitted to the District for review and approval within one calendar quarter whenever there is a change in the component list or diagrams.

2. The owner or operator of any existing facility subject to this Rule shall comply with all the provisions of this Rule by December 10, 1992. In addition, the owner or operator shall comply with the following schedule:
  - a. Complete identification of all major components and critical components subject to this Rule by June 10, 1992.
  - b. Initiate required inspections and recordkeeping by December 10, 1992.
3. After December 10, 1991 the owner or operator of a new facility or an existing facility which adds new components subject to this Rule shall comply with the provisions of this Rule for all applicable components at the time operation commences.