

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

**RULE 2.21 - ORGANIC LIQUID STORAGE AND TRANSFER**

*(Adopted March 23, 1994; Revised June 12, 2002; Revised September 14, 2005)*

**INDEX**

**100 GENERAL**

- 101 PURPOSE
- 102 APPLICABILITY
- 110 EXEMPTION - SMALL CAPACITY STORAGE TANKS
- 111 LIMITED EXEMPTION - PREVENTATIVE MAINTENANCE
- 112 EXEMPTION - SUBMERGED FILL PIPE
- 113 EXEMPTION - PHARMACEUTICAL MANUFACTURING OPERATIONS

**200 DEFINITIONS**

- 201 AIR POLLUTION CONTROL OFFICER (APCO)
- 202 DECK FITTING
- 203 EXTERNAL FLOATING ROOF TANK
- 204 FIXED ROOF TANK
- 205 GAS LEAK
- 206 GAS TIGHT
- 207 GASOLINE
- 208 GASOLINE BULK PLANT
- 209 GAUGE FLOAT
- 210 GAUGE HATCH/SAMPLE WELL (PORTS)
- 211 GUIDEPOLE GUIDE POLE
- 212 INTERNAL FLOATING ROOF TANK
- 213 LEAK FREE
- 214 LIQUID MOUNTED SEAL
- 215 LOADING FACILITY
- 216 MECHANICAL SHOE SEAL
- 217 ORGANIC LIQUID
- 218 PRESSURE TANK
- 219 PRESSURE-VACUUM VALVE
- 220 PREVENTATIVE MAINTENANCE
- 221 REID VAPOR PRESSURE
- 222 RESILIENT TOROID SEAL
- 223 RIM VENT
- 224 ROOF DRAIN
- 225 ROOF LEG
- 226 STORAGE TANK
- 227 SUBMERGED FILL PIPE

- 228 SWITCH LOADING
- 229 TERMINAL
- 230 TRANSPORT EQUIPMENT
- 231 TRANSPORT VESSEL
- 232 TRUE VAPOR PRESSURE
- 233 VACUUM BREAKER
- 234 VAPOR RECOVERY SYSTEM
- 235 VIEWPORT
- 236 VISIBLE GAP
- 237 VOLATILE ORGANIC COMPOUND

**300 STANDARDS**

- 301 STORAGE TANK GREATER THAN 40,000 GALLONS CAPACITY
- 302 EXTERNAL FLOATING ROOF TANK
- 303 INTERNAL FLOATING ROOF TANK
- 304 VAPOR RECOVERY SYSTEM
- 305 DECK FITTING
- 306 MECHANICAL SHOE SEAL AND SECONDARY SEAL
- 307 RESILIENT TOROID OR LIQUID MOUNTED SEAL AND SECONDARY SEAL
- 308 TERMINAL LOADING
- 309 GASOLINE BULK PLANT LOADING
- 310 TRANSPORT VESSEL
- 311 OTHER GASOLINE LOADING
- 312 OTHER ORGANIC LIQUID LOADING
- 313 SWITCH LOADING
- 314 OPERATING PRACTICES
- 315 STORAGE TANK CLEANING

**500 MAINTENANCE, MONITORING, REPORTING, AND RECORD KEEPING**

- 501 MAINTENANCE
- 502 MONITORING
- 503 REPORTING
- 504 RECORD KEEPING

**600 TEST METHODS AND PROCEDURES**

- 601 ASTM METHOD D-323-99a
- 602 ASTM METHOD D-2879-97(2002)(e1)
- 603 EPA METHODS 2A AND 2B
- 604 EPA METHOD 18
- 605 EPA METHOD 21
- 606 EPA METHODS 25A AND 25B
- 607 CARB TEST PROCEDURE TP-203.1
- 608 CARB TEST PROCEDURES TP-201.1B,TP-201.1C, TP-201.1D, TP-

201.1E, TP-201.3,TP-201.3B  
609 ALTERNATIVE TEST METHODS  
610 MULTIPLE TEST METHODS

**100 GENERAL**

- 101 **PURPOSE:** To limit emissions of volatile organic compounds from the storage and transfer of organic liquids.
- 102 **APPLICABILITY:** This rule applies to any storage tank with a capacity of greater than 250 gallons, any gasoline bulk plant, any terminal, or any transport vessel that stores or transfers an organic liquid with a true vapor pressure of 0.5 psia or greater. For the purposes of this rule, the organic liquid's true vapor pressure may be obtained from Table 1, provided that the actual storage temperature of the organic liquid does not exceed the corresponding maximum temperature specified or, may be determined according to the test method specified in Section 602, under actual storage conditions.
- 110 **EXEMPTION - SMALL CAPACITY STORAGE TANKS:** The provisions of this rule do not apply to stationary storage tanks having a capacity of equal to or less than 250 gallons.
- 111 **LIMITED EXEMPTION - PREVENTATIVE MAINTENANCE:**  
The provisions of sections 302,303,304,305, 306, and 307 shall not apply to tanks undergoing preventative maintenance provided all of the following conditions are met:
- 111.1 The operator shall notify the APCO prior to performing preventative maintenance. In this notification, the operator shall identify the affected tank, list the requirement(s) the operator wishes to exempt, explain how the maintenance will prevent compliance with the requirement(s), specify the expected duration of maintenance, describe the measure(s) the operator will take to minimize emissions as much as practicable during maintenance, and explain the anticipated effect of not performing the maintenance.
  - 111.2 The tank is in compliance with all District regulations prior to undergoing preventative maintenance.
  - 111.3 Replacement of any tank seal section must comply with the applicable provisions of this rule and the District must receive written notification of the tank permit number and seal type at least three days prior to installation. Replacement of seal sections having a cumulative length greater than 20% of the tank circumference would be subject to the permitting provisions in Rule 3.1.
  - 111.4 The tanks shall not receive or empty product while undergoing preventative maintenance.

- 111.5 Emissions shall be minimized to the maximum extent practicable during preventative maintenance. Any mitigation measure(s) shall be implemented immediately.
- 111.6 All preventative maintenance shall be accomplished as expeditiously as practicable and in no case exceed 72 hours per event. The time allowed under this exemption shall not exceed 12 days annually per tank.
- 111.7 Records of the preventative maintenance shall be kept in accordance with Sections 503.4, and 504 of this rule.
- 112 **EXEMPTION - SUBMERGED FILL PIPE:** Storage tanks having a vapor control system as specified in Sections 302 or 303 are exempt from the requirement for a submerged fill pipe.
- 113 **EXEMPTION - PHARMACEUTICAL MANUFACTURING OPERATIONS:** The provisions of this rule shall not apply to pharmaceutical manufacturing operations applicable to Rule 2.35.

## 200 DEFINITIONS

- 201 **AIR POLLUTION CONTROL OFFICER (APCO):** The Air Pollution Control Officer of the Yolo-Solano Air Quality Management District.
- 202 **DECK FITTING:** Any functional or operational device attached to an external or internal floating roof including but not limited to an access hatch, fixed roof support column and well, gauge float, gauge hatch, sample well, guidepole, ladder and well, rim vent, roof drain, roof leg, or vacuum breaker.
- 203 **EXTERNAL FLOATING ROOF TANK:** A storage tank equipped with a floating roof exposed to the atmosphere that floats on the surface of the stored liquid. The floating roof is equipped with deck fittings, a primary seal, and a secondary seal.
- 204 **FIXED ROOF TANK:** A storage tank with a roof that is permanently affixed to the shell of the storage tank.
- 205 **GAS LEAK:** A reading in excess of 1,000 ppmv, above background, on a portable hydrocarbon analyzer that is calibrated with methane as determined in accordance with the test method specified in Section 605.
- 206 **GAS TIGHT:** A condition without a gas leak.
- 207 **GASOLINE:** Any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 4.0 pounds per square inch or greater, determined in

accordance with the test method specified in Section 601, and used as a motor vehicle fuel or any fuel which is commonly or commercially known or sold as gasoline.

- 208 **GASOLINE BULK PLANT:** Any gasoline loading facility where primary delivery of gasoline to a storage tank is other than by pipeline.
- 209 **GAUGE FLOAT:** A device to indicate the level of the liquid within a storage tank. The float rests on the liquid surface inside a gauge well in the storage tank.
- 210 **GAUGE HATCH/SAMPLE WELL (PORTS):** Consists of a pipe sleeve equipped with a self-closing gasketed cover and allows hand-gauging or sampling of the stored liquid. The gauge hatch/sample port is usually located beneath the gauger's platform, which is mounted on top of the tank shell. A cord may be attached to the self-closing gasketed cover so that the cover can be opened from the platform.
- 211 **GUIDEPOLE:** An anti-rotational device that is fixed to the top and bottom of a storage tank, passing through a well in a floating roof. A guidepole may be solid or be equipped with slots or holes for gauging purposes.
- 212 **INTERNAL FLOATING ROOF TANK:** A storage tank equipped with a fixed roof and a floating roof that floats on the surface of the liquid being contained (but not necessarily in complete contact with it). The floating roof is equipped with deck fittings, a primary seal, and a secondary seal.
- 213 **LEAK FREE:** A liquid leak of less than three drops per minute from any single leak source other than the liquid fill line and vapor line disconnect operations.
- 214 **LIQUID MOUNTED SEAL:** A primary seal mounted in full contact with the liquid in the annular space between the tank shell and the floating roof.
- 215 **LOADING FACILITY:** Any organic liquid or gasoline loading rack or set of such racks that load organic liquid or gasoline into transport vessels, which are located on one or more contiguous properties within the District, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person or persons under common control.
- 216 **MECHANICAL SHOE SEAL:** A metallic sheet (the shoe) that is held vertically against the vertical tank wall. The shoe is connected by braces to the floating roof and is held tightly against the wall by springs or weighted levers. A flexible coated fabric (envelope) is suspended from the shoe seal to the floating roof to form a vapor barrier over the annular space between the roof and the primary seal.
- 217 **ORGANIC LIQUID:** Any liquid which contains any volatile organic compound or

mixtures of volatile organic compounds with a true vapor pressure of 0.5 psia or greater under actual storage or loading conditions except liquefied petroleum gases.

- 218 **PRESSURE TANK:** A storage tank that maintains working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, except under emergency conditions.
- 219 **PRESSURE-VACUUM VALVE:** A valve for relieving any pressure or vacuum exceeding acceptable limits.
- 220 **PREVENTATIVE MAINTENANCE:** Tightening, adjusting, repairing, or replacing a component of a vapor control device, tank roof, roof fitting, or tank seal that has become worn due to normal use. The purpose of preventative maintenance is to prevent equipment breakdowns and to minimize emissions, as much as practicable, over the useful life of the component.
- 221 **REID VAPOR PRESSURE:** The absolute vapor pressure of an organic liquids except liquified petroleum gases, as determined in accordance with the test method specified in Section 601.
- 222 **RESILIENT TOROID SEAL:** A core of open-cell foam encapsulated in a coated fabric that is attached to a mounting on the deck perimeter, and is continuous around the floating roof circumference.
- 223 **RIM VENT:** Rim vents are used on storage tanks equipped with a seal design that creates a vapor pocket in the seal and rim area, such as a mechanical shoe seal. The vent is used to release excess pressure or vacuum that is present in the vapor space bounded by the primary-seal shoe, the floating roof rim, the primary seal fabric, and the liquid level. Rim vents usually consists of weighted pallets that rest on a gasketed cover.
- 224 **ROOF DRAIN:** A drain on the roof of an external floating roof tank that is used to remove rainwater from the floating roof. A closed roof drain removes the rainwater from the surface of the roof through a flexible hose through the stored liquid prior to exiting the tank. With a closed roof drain, the rainwater does not come in contact with the liquid stored in the tank. An open roof drain is any drain other than the closed roof drain. An open roof drain is typically used only during an emergency.
- 225 **ROOF LEG:** An adjustable or fixed leg that is attached to the floating roof deck to support or hold the floating roof deck at a predetermined distance off the storage tank bottom to prevent damage to the fittings located underneath the deck and to allow for storage tank cleaning or repair. For adjustable legs, the load-carrying element passes through a well or sleeve in the deck.

- 226 **STORAGE TANK:** Any above-ground stationary container designed and equipped for storage of an organic liquid.
- 227 **SUBMERGED FILL PIPE:** Any discharge pipe or nozzle which meets either of the following conditions:
- 227.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle is totally submerged when the liquid level is 6 inches from the bottom of the tank.
- 227.2 Where the tank is filled from the side, the end of the discharge pipe or nozzle is totally submerged when the liquid level is 24 inches from the bottom of the tank.
- 228 **SWITCH LOADING:** Loading diesel fuel into a delivery vessel or storage tank whose previous load was gasoline; or loading any organic liquid not subject to this rule into a delivery vessel or storage tank whose previous load was an organic liquid subject to this rule.
- 229 **TERMINAL:** Any loading facility where delivery of an organic liquid to a storage tank is primarily by pipeline. In the event the pipeline is not operational, delivery of an organic liquid to the storage tanks may be by transport vessel. If other organic liquids are added to the stock organic liquid, such additives are primarily delivered by transport vessel.
- 230 **TRANSFER EQUIPMENT:** All components of the liquid loading line between the liquid pump and the transporting vessel, and the vapor return line from the transporting vessel to the storage tank, or to and including the vapor recovery system.
- 231 **TRANSPORT VESSEL:** Any cargo tank, tank truck, trailer, or railroad tank car that is designed and equipped to receive and transport organic liquid.
- 232 **TRUE VAPOR PRESSURE:** The equilibrium partial pressure exerted by a organic liquid as determined in accordance with the test method specified in Section 602.
- 233 **VACUUM BREAKER:** A device that equalizes the pressure of the vapor space across the floating roof deck as the deck is either being landed on or off its legs. A vacuum breaker consists of a well with a cover. Attached to the underside of the cover is a guided leg long enough to contact the tank bottom as the floating deck approaches. When in contact with the tank bottom, the guide leg mechanically opens the breaker by lifting the cover off the well; otherwise the cover closes the well. Because the purpose of the vacuum breaker is to allow for the free exchange of air and/or vapor, the well does not extend appreciably below the deck.



- 234 **VAPOR RECOVERY SYSTEM:** Any vapor gathering system which is capable of collecting and returning discharged VOC vapors and gases during loading of organic liquids into cargo tanks or transport vessels, back to a stationary storage tank, or into an enclosed process system.
- 235 **VIEWPORT:** An accessible opening in the fixed roof of an internal floating roof tank that measures at least 30 inches on each side or at least 30 inches in diameter.
- 236 **VISIBLE GAP:** An opening which exceeds 1/8 inch.
- 237 **VOLATILE ORGANIC COMPOUND (VOC):** For the purposes of this rule, has the same meaning as in Rule 1.1, General Provisions and Definitions.

### 300 STANDARDS

- 301 **STORAGE TANK GREATER THAN 40,000 GALLONS CAPACITY:** A person shall not store organic liquid in any stationary storage tank of more than 40,000 gallons capacity, unless such storage tank is a pressure tank or is designed and equipped with one of the vapor loss control devices specified in Sections 302, 303, or 304. The owner or operator of any storage tank subject to the requirements of Sections 302 or 303 shall meet the following requirements:
- 301.1 The true vapor pressure of the organic liquid stored in the tank is less than 11.0 psia under actual storage conditions as determined in accordance with the test method specified in Section 602.
- 301.2 The organic liquid is not visible above the floating roof.
- 301.3 The floating roof is in contact with the liquid contents (but not necessarily in complete contact with it) at all times except when the storage tank is completely emptied, and subsequently refilled. During this period, emptying or refilling shall be a continuous process.
- 301.4 Written notification shall be provided to the APCO at least 7 days prior to landing a floating roof on its legs.
- 301.5 After June 12, 2002, the installation of a new or replacement primary seal shall be a mechanical shoe seal or liquid mounted seal. For existing resilient toroid seals, replacement means adding, replacing, or altering more than 5% of the seal foam or cover material.
- 302 **EXTERNAL FLOATING ROOF TANK:** If the vapor loss control device used to comply with Section 301 is an external floating roof tank, the closure device shall meet the following requirements:

- 302.1 Consist of two seals, one above the other; the one below shall be referred to as the primary seal, and the one above shall be referred to as the secondary seal. The primary and secondary seal shall comply with the requirements specified in Sections 306 and 307, as applicable. Deck fittings shall comply with the requirements specified in Section 305.
- 303 **INTERNAL FLOATING ROOF TANK:** If the vapor loss control device used to comply with Section 301 is an internal floating roof tank, the closure device shall meet the following requirements:
- 303.1 Consist of two seals, one above the other; the one below shall be referred to as the primary seal, and the one above shall be referred to as the secondary seal. The primary and secondary seal shall comply with the requirements specified in Sections 306 and 307, as applicable. Deck fittings shall comply with the requirements specified in Section 305.
- 303.2 Vapor concentrations above an internal floating roof shall not exceed 30% of its lower explosive limit (LEL).
- 303.3 Effective March 23, 1995, all internal floating roof tanks subject to the provisions of this rule that have been degassed shall be equipped with at least 3 viewing ports. The viewports shall be installed on the fixed roof an equidistance apart and in such a manner so that each viewport provides a unobstructed view of the tank wall and roof seal. An alternate number or size of viewports may be approved at the discretion of the APCO.
- 304 **VAPOR RECOVERY SYSTEM:** If the vapor loss control device used to comply with Section 301 is a vapor recovery system, such system shall collect and process all organic vapors and gases and meet the following requirements:
- 304.1 The system shall have an abatement efficiency of at least 95% by weight as determined annually in accordance with the test methods specified in Section 603 and Sections 604 and 606, as applicable.
- 304.2 Any tank gauging or sampling device on a tank vented to the vapor recovery system shall be equipped with a gas-tight cover which shall be closed at all times, except during gauging or sampling.
- 304.3 All piping, fittings, and pressure-vacuum relief valves associated with the fixed roof tank and the vapor recovery system shall be constructed and maintained in a gas-tight condition unless the pressure within the fixed roof tank exceeds the valve setting pressure.
- 305 **DECK FITTING:**

305.1 Internal Floating Roof Tank

- a. Fixed roof support columns and wells shall be equipped with a sliding gasketed cover or with a flexible fabric sleeve.
- b. Ladder wells shall be equipped with a gasketed cover. The cover shall be closed at all times, with no visible gaps, except when the well must be opened for access.
- c. Slotted and solid guidepoles shall comply with the requirements specified in Section 305.2.h.
- d. Other deck fittings shall comply with the requirements specified in Sections 305.2.b, 305.2.c, and 305.2.g.

305.2 External Floating Roof Tank

- a. Except for slotted or solid guidepoles, vacuum breakers, rim vents, roof drains, and leg sleeves, each opening in the roof shall be equipped with a gasketed cover, seal, or lid that shall be maintained in a closed position at all times, with no visible gaps, except when the device is in actual use.
- b. Vacuum breakers shall be equipped with a gasket, with no visible gaps, and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.
- c. Rim vents shall be equipped with a gasket, with no visible gaps, and shall be set to open only when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.
- d. Each roof drain that is an open-type roof drain shall be equipped with a slotted membrane fabric cover that covers at least 90% of the area opening. The fabric cover must be impermeable if the liquid is drained into the contents of the tank.
- e. External floating roof legs shall be equipped with vapor socks or vapor barriers and be maintained in a gas-tight condition.
- f. Each opening in a floating roof except for vacuum breakers and rim vents shall provide a projection below the liquid surface.
- g. Each access hatch and gauge float well shall be equipped with a cover that is gasketed and bolted. The cover shall be closed at all times, with no visible gaps, except when the hatch or well must be opened for access.
- h. Acceptable controls for slotted or solid guidepoles are one of the following:
  - (i) Pole Float System  
Each opening through the deck of the floating roof for a slotted guidepole shall be equipped

with a deck cover, a pole wiper and pole float. The deck cover shall also be equipped with a gasket between the cover and deck. The wiper or seal of the pole float shall be at or above the height of the pole wiper.

- (ii) Pole Sleeve System  
Each opening through the deck of the floating roof for a slotted guidepole shall be equipped with a deck cover, a pole wiper and pole sleeve. The deck cover shall be equipped with a gasket between the cover and deck. The sleeve extends into the stored liquid.
- (iii) Internal Sleeve Emission Control System  
An internal guidepole sleeve that eliminates the hydrocarbon vapor emission pathway from inside the tank through the guidepole slots to the outside is a guidepole cover at the top of the guidepole, and a well cover positioned at the top of the guidepole well. The well cover seals any opening between the well cover and the guidepole (e.g. pole wiper), any opening between the well cover and any other object that passes through the well cover, or any other opening in the top of the guidepole well.
- (iv) Solid Guidepole System  
A solid guidepole system includes, a guidepole cover at the top of the guidepole, and a well cover positioned at the top of the guidepole well. The well cover shall seal any opening between the well cover and the guidepole, any opening between the well cover and any other object that passes through the well cover, or any other opening in the top of the guidepole well.
- (v) Flexible Enclosure System  
A flexible device that completely encloses the slotted guidepole and eliminates the hydrocarbon vapor emission pathway from inside the tank through the guidepole slots to the outside air includes a guidepole cover at the top of the guidepole, and a well cover positioned at the top of the guidepole well. The well cover shall seal any opening between the well cover and the guidepole, any

opening between the well cover and any object that passes through the well cover, or any other opening in the top of the guidepole well.

306 **MECHANICAL SHOE SEAL AND SECONDARY SEAL:** Any storage tank that is equipped with a mechanical shoe seal shall meet the following requirements:

306.1 There shall be no holes, tears, or openings which allow the emission of organic vapors through the secondary seal. There shall be no holes, tears, or openings in the primary seal envelope surrounding the annular vapor space enclosed by the roof edge, stored liquid surface, shoe, and seal fabric.

306.2 Any external floating roof tank where a mechanical shoe seal was installed on or after September 1, 1978, shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 24 inches above the stored liquid surface.

306.3 The geometry of the shoe shall be such that the gap between the shoe and the tank shell shall not exceed twice the seal gap criteria for a vertical length greater than 18 inches.

306.4 No gap between the tank shell and the primary seal shall exceed:

- a. 1-1/2 inch.
- b. 1/2 inch for a cumulative length greater than 10% of the circumference of the tank.
- c. 1/8 inch for a continuous length of more than 10% of the circumference of the tank.
- d. 1/8 inch for a cumulative length greater than 30% of the circumference of the tank.

306.5 Any secondary seal shall extend from the floating roof to the storage tank shell and shall not be attached to the primary seal. For secondary seals installed after March 23, 1995, no gap between the tank shell and the seal shall exceed:

- a. 0.06 inch.
- b. 0.02 inch for a cumulative length greater than 5% of the circumference of the tank excluding gaps less than 1.79 inches from vertical weld seams.

306.6 No gap between the tank shell and the secondary seal shall exceed:

- a. 1/2 inch.
- b. 1/8 inch for a cumulative length greater than 5% of the circumference of the tank.

306.7. The secondary seal shall allow easy insertion of probes up to 1-1/2 inch in width in order to measure gaps in the primary seal.

307 **RESILIENT TOROID OR LIQUID MOUNTED SEAL AND SECONDARY SEAL:** For any storage tank that is equipped with a resilient toroid seal or a liquid mounted seal shall meet the following requirements:

307.1 There shall be no holes, tears, or openings which allow the emission of organic vapors through the secondary seal. There shall be no holes, tears, or openings in the primary seal.

307.2 For primary seals, no gap between the storage tank shell and the seal shall exceed:

- a. 1/2 inch.
- b. 1/8 inch for a cumulative length greater than 5% of the circumference of the storage tank.

307.3 Any secondary seal shall extend from the floating roof to the storage tank shell and shall not be attached to the primary seal. For secondary seals installed after March 23, 1995, no gap between the tank shell and the seal shall exceed:

- a. 0.06 inch.
- b. 0.02 inch for a cumulative length greater than 5% of the circumference of the tank excluding gaps less than 1.79 inches from vertical weld seams.

307.4 For secondary seals, no gap between the storage tank shell and the secondary seal shall exceed:

- a. 1/2 inch.
- b. 1/8 inch for a cumulative length greater than 5% of the circumference of the storage tank.

307.5 The secondary seal shall allow easy insertion of probes up to 1/2 inch in width in order to measure gaps in the primary seal.

308 **TERMINAL LOADING:** The owner or operator of any terminal shall not transfer or permit to be transferred organic liquid into any transport vessel unless such terminal is equipped with a CARB certified vapor recovery system pursuant to Section 41954 of the California Health and Safety Code that is operated and maintained in compliance with the requirements of such certification or, shall be a District-approved vapor recovery system only when such system does not require CARB certification pursuant to Section 41954 of the California Health and Safety Code.

- 308.1 A person shall not transfer or permit to be transferred organic liquid into any transport vessel unless the VOC emissions to the atmosphere do not exceed 0.08 pounds per 1,000 gallons of organic liquid transferred.
- 308.2 All organic liquid loading equipment shall be maintained to be leak free, gas tight, and in good working order.
- 308.3 During transfer operations, the allowed drainage during disconnect of any transport vessels shall be no more than ten milliliters liquid, averaged over three disconnects.
- 308.4 All transport vessel loading operations shall be accomplished by bottom loading.
- 309 **GASOLINE BULK PLANT LOADING:** The owner or operator of any gasoline bulk plant shall not transfer or permit to be transferred organic liquid into any transport vessel unless such gasoline bulk plant is equipped with a CARB certified vapor recovery system pursuant to Section 41954 of the California Health and Safety Code that is operated and maintained in compliance with the requirements of such certification or, shall be a District-approved vapor recovery system only when such system does not require CARB certification pursuant to Section 41954 of the California Health and Safety Code.
- 309.1 All loading facilities transferring organic liquid into transport vessels shall be equipped with a certified vapor recovery system which prevents at least 95% by weight of VOC vapors displaced from entering the atmosphere.
- 309.2 All organic liquid transfer equipment shall be maintained leak free, gas tight, and in good working order.
- 309.3 All transport vessel loading shall be accomplished by bottom loading.
- 310 **TRANSPORT VESSEL:** No person shall use or operate any transport vessel required to be licensed for use on any street or highway unless such transport vessel has a valid CARB certification pursuant to Section 41962 of the California Health and Safety Code. Each transport vessel shall be operated and maintained in compliance with the requirements of such certification and shall be connected to the loading facility vapor recovery system before organic liquid is transferred.
- 311 **GASOLINE LOADING OTHER THAN TERMINAL OR GASOLINE BULK PLANT:** Except for equipment subject to Sections 308 or 309, no person shall transfer or permit the transfer of gasoline into any storage tank with a capacity of more than 250 gallons and equal to or less than 40,000 gallons unless the following conditions are met:

- 311.1 Such transfer is made employing a CARB certified vapor recovery system that prevents the release to the atmosphere of not less than 95% by weight of the organic vapors displaced;
  - 311.2 Such transfer is made employing a CARB certified submerged fill pipe; and
  - 311.3 The vapor recovery system shall be maintained and operated according to the manufacturer's specifications and as per the most recent applicable CARB Executive Order.
- 312 **OTHER ORGANIC LIQUID LOADING:** Except for equipment subject to sections 308, 309, or 310, no person shall transfer or permit the transfer of organic liquid with a true vapor pressure greater than 1.5 psia into any storage tank with a capacity of more than 250 gallons and equal to or less than 40,000 gallons unless the following conditions are met:
- 312.1 Such transfer is made employing a vapor control system that prevents the release to the atmosphere of not less than 95% by weight of the organic vapors displaced; and
  - 312.2 Such transfer is made employing a submerged fill pipe.
- 313 **SWITCH LOADING:** Switch loading shall be subject to the requirements of Sections 308, 309, 310, 311 and 312, as applicable.
- 314 **OPERATING PRACTICES:** Organic liquids subject to this rule shall not be discarded to public sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere.
- 315 **STORAGE TANK CLEANING:** The emissions of organic compounds resulting from degassing a storage tank subject to the requirements of Section 301 of this rule shall be controlled by a system which collects and processes all organic vapors and gases and has an abatement efficiency of at least 90% by weight. The system shall be operated until the concentration of volatile organic compounds in the tank is less than 10,000 ppm expressed as methane as determined in accordance with the test method specified in Section 605.

## 500 MAINTENANCE, MONITORING, REPORTING, AND RECORD KEEPING

- 501 **MAINTENANCE:** The owner or operator of tanks subject to Section 301, shall submit a maintenance plan to the APCO at least 7 days prior to performing maintenance on any equipment subject to the requirements of this rule. The plan shall state the equipment Permit to Operate number, a detailed description of the maintenance to be performed, the expected duration of the maintenance, the reason



that the maintenance is necessary, emission control measures that will be employed, and the effect of not performing the maintenance.

502 **MONITORING:** The owner or operator shall submit written notification to the APCO at least 7 days prior to performing monitoring on equipment subject to the requirements of this rule and meet the following:

502.1 To demonstrate compliance with Section 302, the owner or operator shall conduct the following in accordance with the District-approved report format:

- a. Perform complete gap measurements of the primary and secondary seals every 12 months and each time the tank is emptied and degassed.
- b. Perform complete gap measurements of all deck fittings every 12 months and each time the tank is emptied and degassed.

502.2 To demonstrate compliance with Section 303, the owner or operator shall conduct the following in accordance with the District-approved report format:

- a. Visually inspect the secondary seal, floating roof, and deck fittings. Use an explosimeter that is calibrated in accordance with the manufacturer's specifications to measure the lower explosive limit (LEL). Compliance shall be verified every 3 months at a distance of no less than 4 feet from the viewport or access hatch.
- b. After March 23, 1995, perform complete gap measurements of the primary and secondary seals every 10 years and each time the tank is emptied and degassed.
- c. After March 23, 1995, perform complete gap measurements of all deck fittings every 10 years and each time the tank is emptied and degassed.

502.3 To demonstrate compliance with Section 308, the owner or operator shall conduct the following in accordance with the District-approved report format:

- a. Measure the vapor recovery system emission rate at least once every 12 months in accordance with the test method specified in Section 607 and the terminal operating conditions shall correspond to those established during the testing conducted for the initial certification criterion.

502.4 To demonstrate compliance with section 311, the owner or operator shall conduct and successfully pass the applicable source test using the most recent applicable CARB Executive Orders, in accordance with the test methods and

procedures as specified in Section 608 annually. The person conducting the performance or re-verification test shall comply with the following:

- a. Conduct tests in accordance with the applicable test methods specified in Section 608 and other CARB testing procedures. Tests shall be conducted using calibrated equipment meeting the calibration range and calibration intervals specified by the manufacturer.
- b. Provide notification to the District at least 3 days prior to testing.
- c. Conduct the tests any time Monday through Friday from 9:00 a.m. through 4:00 p.m.

503 **REPORTING:** The owner or operator subject to the requirements of this rule shall meet the following requirements:

503.1 All reports specified in Section 502 shall include sufficient detail to verify compliance with all applicable rule requirements and shall be submitted to the APCO within 45 calendar days after the monitoring work is completed.

503.2 All source tests performed shall be documented in a report in accordance with the test methods and procedures specified in Section 600. The report shall include sufficient detail to verify compliance with all applicable rule requirements and shall be submitted to the APCO within 45 calendar days after the completion of the test. The source test report shall include the date of test and names and titles of personnel performing the test.

503.3 For storage tanks, gasoline bulk plants, and terminals, submit throughput reports to the APCO no later than March 31 for the previous calendar year. Storage tank throughput reports shall include the actual quarterly volume of organic liquid transferred into each tank. Gasoline bulk plant and terminal throughput reports shall include the actual quarterly volume of organic liquid transferred.

503.4 All sources claiming the exemption in Section 111 for preventative maintenance shall send to the District a report including an identification of the tank the maintenance was performed on, a description of the maintenance performed, the day(s) the maintenance was performed, and exact time the exemption was claimed.

504 **RECORD KEEPING:** The owner or operator subject to the requirements of this rule shall maintain accurate records to demonstrate compliance in accordance with the requirements of Sections 501, 502, and 503 on site for a period of at least 5 years and make such records available to the APCO upon request.

- 600 TEST METHODS:** A result by any of the test methods or test procedures listed below, or any amendments and successors thereto, which shows non-compliance with any provision of this rule shall constitute a violation of this rule.
- 601 **ASTM METHOD D-323-99a:** Reid vapor pressure shall be determined in accordance with American Society of Testing and Materials D-323-99a, Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method).
- 602 **ASTM METHOD D-2879-97(2002)(e1):** True vapor pressure shall be determined in accordance with American Society of Testing and Materials D-2879-97(2002)(e1), Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope.
- 603 **EPA METHODS 2A OR 2B:** The gas flow rate shall be determined in accordance with EPA Method 2A, Direct Measurement of Gas Volume Through Pipes and Small Ducts; or EPA Method 2B, Determination of Exhaust Gas volume flow rate From Gasoline Vapor Incinerators, as applicable.
- 604 **EPA METHOD 18:** Exempt compounds shall be determined in accordance with EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography.
- 605 **EPA METHOD 21:** The gas tight condition shall be determined in accordance with EPA Method 21, Determination of Volatile Organic Compound Leaks, using a portable analyzer calibrated with methane gas.
- 606 **EPA METHODS 25A OR 25B:** VOC emissions shall be determined in accordance with EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Nondispersive Infrared Analyzer, calibrated with methane gas; or EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer, calibrated with methane gas, as applicable.
- 607 **CARB TEST PROCEDURE TP-203.1:** The terminal vapor recovery system efficiency shall be determined in accordance with CARB Vapor Recovery Test Procedure TP-203.1, Determination of Emission Factor of Vapor Recovery Systems of Terminals.
- 608 **CARB TEST PROCEDURES TP-201.1B, TP-201.1C, TP-201.1D, TP-201.1E, TP-201.3, TP-201.3B :** The vapor recovery system efficiency shall be determined in accordance with any of the CARB Vapor Recovery Test Procedures listed above, or the most current CARB Executive Orders as listed on the Permit to Operate.
- 609 **ALTERNATIVE TEST METHODS:** Other test methods demonstrated to provide results that are acceptable for determining Reid or true vapor pressure for purposes

of demonstrating compliance with Rule 2.21, after review and approval in writing by the District, the ARB, and the U.S. EPA, may also be used.

- 610 **MULTIPLE TEST METHODS:** When more than one test method is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of this rule.

**TABLE 1. STORAGE TEMPERATURE VERSUS PRODUCT TRUE VAPOR PRESSURE**

Organic Liquid	Reference Properties			Not to Exceed Max. Temperature EF	
	Density lb/gal	Gravity EAPI	Initial Boiling Point EF	0.5 psia	1.5 psia
Kerosene	---	42.5	350	195	250
Diesel	---	36.4	372	230	290
Gas Oil	---	26.2	390	249	310
Stove Oil	---	23.0	421	275	340
Jet Fuel JP-1	---	43.1	330	165	230
Jet Fuel JP-3	---	54.7	110	---	25
Jet Fuel JP-4	---	51.5	150	20	68
Jet Fuel JP-5	---	39.6	355	205	260
Jet Fuel JP-7	---	44-50	360	205	260
Fuel Oil No. 1	---	42.5	350	195	250
Fuel Oil No. 2	---	36.4	372	230	290
Fuel Oil No. 3	---	26.2	390	249	310
Fuel Oil No. 4	---	23.0	421	275	340
Fuel Oil No. 5	---	19.9	560	380	465
Residual Fuel Oil	---	19-27	---	405	---
Fuel Oil No. 6	---	16.2	625	450	---
Asphalt 60-100 pen.	---	---	---	490	550
Asphalt 120-150 pen.	---	---	---	450	500
Asphalt 200-300 pen.	---	---	---	360	420
Acrylonitrile	6.8	41.8	173	30	62
Benzene	7.4	27.7	176	34	70
Carbon Disulfide	10.6	22.1	116	---	10
Carbon Tetrachloride	13.4	---	170	20	63
Chloroform	12.5	---	142	---	40
Cyclohexane	6.5	49.7	177	30	65
1,2 Dichloroethane	10.5	---	180	35	75
Ethyl Acetate	7.5	23.6	171	38	70
Ethyl Alcohol	6.6	47.0	173	55	85
Isopropyl Alcohol	6.6	47.0	181	62	95
Methyl Alcohol	6.6	47.0	148	30	62
Methyl Ethyl Ketone	6.7	44.3	175	30	70
Toluene	7.3	30.0	231	75	120
Vinyl Acetate	7.8	19.6	163	30	65