

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

(Adopted August 15, 1977)(Amended June 1, 1984)(Amended December 7, 1990)  
(Amended March 11, 1994)(Amended May 6, 2005)  
(Amended November 4, 2011)([PAR 463](#))

## PROPOSED AMENDED RULE 463.

## ORGANIC LIQUID STORAGE

### (a) Purpose and Applicability

The purpose of this rule is to reduce emissions of ~~v~~Volatile ~~e~~Organic ~~e~~Compounds (VOC) from the storage of organic liquids in stationary above-ground tanks. ~~-~~This rule applies to any above-ground stationary tank with a capacity of 75,000 liters (19,815 gallons) or greater used for storage of organic liquids, and any above-ground tank with a capacity between 950 liters (251 gallons) and 75,000 liters (19,815 gallons) used for storage of gasoline. This rule also applies to any above-ground stationary tanks that are located at a Petroleum Facility and have a Potential For VOC Emissions of 6 tons per year or greater.

### (b) Definitions

For purposes of this rule, the following definitions apply:

- (1) ACTUAL STORAGE CONDITIONS means the temperature at which a product is stored in an above ground stationary tank.
- (2) AMBIENT TEMPERATURE is the temperature of an organic liquid within a storage tank that has been influenced by atmospheric conditions only and is not elevated by a non-atmospheric means of heating at the tank which includes but is not limited to steam, hot water, heaters, heat exchangers, tank insulation, or tank jacketing.
- (3) CERTIFIED PERSON is an individual who has successfully completed the District tank self-inspection program, and who holds a certificate issued by the Executive Officer evidencing that such individual is in good standing in this program.
- (4) DRAIN-DRY BREAKOUT TANK is an above-ground storage tank designed such that the floating roof rests on support legs no higher than one foot along the tank shell with a bottom sloped to a sump or sumps such that no product or sludge remains on the tank bottom and walls after emptying except clingage and is primarily used to receive product from pipelines and to distribute product back into pipelines.
- (5) EXEMPT COMPOUND is as defined in Rule 102.

(6) FACILITY is any equipment or group of equipment or other VOC-emitting activities, which are located on one or more contiguous properties within the South Coast AQMD, 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 by persons under common control), or an outer continental shelf (OCS) source as determined in 40 CFR Section 55.2. Such above- described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one Facility.

(67) GASOLINE means any petroleum distillate having a Reid vapor pressure of 200 mm Hg (3.9 pounds per square inch), or greater.

(78) HEAVY CRUDE OIL means a crude oil with American Petroleum Institute (API) gravity 20 degrees or less.

(89) ORGANIC LIQUID is any liquid containing VOC.

(10) PETROLEUM FACILITY is any Facility primarily engaged in the production, refining, storage, transfer or distribution of crude petroleum or petroleum products as defined in the Standard Industrial Classification for crude petroleum and natural gas (SIC code 1311), petroleum refining (SIC code 2911), petroleum bulk stations and terminals (SIC code 5171), or other related industries (e.g., SIC codes 4226, 4612, 4613, 4923 and 5541).

(11) POTENTIAL FOR VOC EMISSIONS means emissions calculated for a Storage Tank constructed after [Date of Adoption] in accordance with 40 CFR §60.5365a, and emissions calculated for a Storage Tank existing on or before [Date of Adoption] using a generally accepted model or calculation methodology based on permitted throughput limits or, when a permitted throughput limit is not available, based on the highest throughput for any one calendar month as reported in the Annual Emissions Report pursuant to Rule 301 - Permit Fees in years 2017 to 2022.

(912) PRESSURE RELIEF VALVE (PRV) is a valve which is automatically actuated by upstream static pressure, and used for safety or emergency purposes.

(103) SEAL is a closure device between the tank wall and the floating roof edge that controls emissions of VOCs. Approved floating roof tank seals are categorized as follows:

- (A) Category "A" seals are seals approved by the Executive Officer as most effective in the control of VOCs and are deemed Best Available Control Technology (BACT) according to the criteria set forth in Attachment A - "Floating Roof Tank Seal Categories."
- (B) Category "B" seals are seals approved by the Executive Officer that are considered more effective than Category "C" seals based on the criteria set forth in Attachment A - "Floating Roof Tank Seal Categories."
- (C) Category "C" seals are seals approved by the Executive Officer which are currently in service but are considered least effective in the control of VOCs.

(144) TANK is any stationary above-ground reservoir or any other stationary above-ground container used for storage of an organic liquid.

(125) VAPOR TIGHT is a condition that exists when the reading on a portable hydrocarbon meter is less than 500 parts per million (ppm), expressed as methane, above background.

(136) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102.

(147) WORKING DAY is Monday through Friday and includes holidays that fall on any of the days Monday through Friday.

(c) Tank Roof Requirements

No person shall place, store or hold in any tank with a capacity of 150,000 liters (39,630 gallons) or greater, any organic liquid having a true vapor pressure of 25.8 mm Hg (0.5 psi) absolute or greater under actual storage conditions, ~~and~~ in any tank of more than 75,000 liters (19,815 gallons) capacity, any organic liquid having a true vapor pressure of 77.5 mm Hg (1.5 psi) absolute or greater under actual storage conditions, and in any above-ground stationary tanks that are located at a Petroleum Facility and have a Potential For VOC Emissions of 6 tons per year or greater, unless such tank is a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor loss to the atmosphere, or is designed and equipped with one of the following vapor control devices, or other vapor control device that has been determined to be equivalent after review by the staffs of the District, the Air Resources Board (ARB), and the United States Environmental Protection Agency (U.S. EPA), and approved in writing by the District Executive Officer, ARB, and U.S. EPA, which is properly installed and continuously maintained in good operating condition:

**(1) External Floating Roof**

An external floating roof shall consist of a pontoon-type or double deck-type cover that continuously rests on the surface of the organic liquid and is equipped with a closure device between the tank shell and roof edge. The closure device shall consist of two seals, with one seal placed above the other. The seal below shall be designated as the primary seal, and the seal above shall be designated as the secondary seal. A seal which is not identified on the current list of seals approved by the Executive Officer shall not be installed or used unless the Executive Officer determines that such seal meets the applicable criteria of subparagraphs (c)(1)(A) through (c)(1)(C).

(A) A closure device on a welded or a riveted tank shell which uses a metallic shoe-type seal as its primary seal shall comply with the following requirements:

- (i) Gaps between the tank shell and the primary seal shall not exceed 1.3 centimeters (1/2 inch) for a cumulative length of 30 percent of the circumference of the tank, and 0.32 centimeter (1/8 inch) for 60 percent of the circumference of the tank. No gap between the tank shell and the primary seal shall exceed 3.8 centimeters (1-1/2 inches). No continuous gap between the tank shell and the primary seal greater than 0.32 centimeter (1/8 inch) shall exceed 10 percent of the circumference of the tank.
- (ii) Gaps between the tank shell and the secondary seal shall not exceed 0.32 centimeter (1/8 inch) for a cumulative length of 95 percent of the circumference of the tank. No gap between the tank shell and the secondary seal shall exceed 1.3 centimeters (1/2 inch).
- (iii) Metallic shoe-type seals installed on or after August 1, 1977 shall be installed so that one end of the shoe extends into the stored organic liquid and the other end extends a minimum vertical distance of 61 centimeters (24 inches) above the stored organic liquid surface.
- (iv) The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria specified in

- clause (c)(1)(A)(i) for a length of at least 46 centimeters (18 inches) in the vertical plane above the liquid surface.
- (B) A closure device which uses a resilient toroid-type seal as its primary seal shall comply with the applicable requirements of subparagraph (c)(1)(A).
- (C) The primary and secondary seals shall comply with the following requirements:
- (i) The primary seal envelope shall be made available for unobstructed inspection by the Executive Officer along its circumference. In the case of riveted tanks with resilient toroid-type seals, at least eight such locations shall be made available; for all other types of seals, at least four such locations shall be made available. If the Executive Officer deems it necessary, further unobstructed inspection of the primary seal may be required to determine the seal's condition along its entire circumference.
  - (ii) The secondary seal shall be installed in a way that permits the Executive Officer to insert probes up to 3.8 centimeters (1-1/2 inches) in width to measure gaps in the primary seal.
  - (iii) The secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.
  - (iv) Notwithstanding the secondary and the primary seal requirements of paragraph (c)(1), a secondary or primary seal may be loosened or removed for preventive maintenance, inspection or repair for a period not exceeding 72 hours with prior notification to the Executive Officer.
- (D) All openings in the roof except pressure-vacuum valves, shall provide a projection below the liquid surface to prevent belching, escape, or entrainment of organic liquid, and shall be equipped with a cover, seal or lid. The cover, seal, or lid shall at all times be in a closed position, with no visible gaps, except when the device or appurtenance is in use. Pressure vacuum valves shall be set to within 10 percent of the maximum allowable working pressure of the roof.

- (E) There shall be no holes, tears or openings in the secondary seal or in the primary seal envelope surrounding the annular vapor space enclosed by the roof edge, seal fabric, and secondary seal.
  - (F) Any emergency roof drain shall be provided with a slotted membrane fabric cover, or equivalent device, that covers at least nine-tenths (9/10) of the area of the opening.
- (2) **Internal Floating-Type Cover**
- A fixed roof tank equipped with an internal floating-type cover shall comply with the following requirements:
- (A) A fixed roof tank with an existing internal floating-type cover approved by the Executive Officer on or before June 1, 1984, shall comply with the requirements applicable at the time such approval was given.
  - (B) A fixed roof tank which has an internal floating-type cover installed, modified, or replaced after June 1, 1984, shall have a closure device which consists of either a single liquid mounted primary seal or a primary and a secondary seal. All openings and fittings shall be fully gasketed or controlled in a manner specified by the Executive Officer. The closure device shall control vapor loss with an effectiveness equivalent to a closure device which meets the requirements of subparagraph (c)(1)(A). Seal designs not identified on the current list of seals approved by the Executive Officer shall not be installed or used unless the Executive Officer has given his prior written approval to its installation or use. For purposes of this paragraph, modification includes an identical replacement.
  - (C) The concentration of organic vapor in the vapor space above the internal floating-type cover shall not exceed 50 percent of its lower explosive limit (LEL) for those installed prior to June 1, 1984 and 30 percent of its LEL for those installed after June 1, 1984. Compliance shall be verified by the use of an explosimeter.
- (3) **Vapor Recovery System**
- A fixed roof tank equipped with a vapor recovery system shall comply with the following requirements:
- (A) Any tank gauging or sampling device on a tank vented to the vapor recovery system shall be equipped with a vapor-tight cover which

shall be closed at all times except during gauging or sampling. The roof of such tank shall be properly maintained in a vapor tight condition with no holes, tears or uncovered openings.

- (B) All piping, valves and fittings shall be constructed and maintained in a vapor-tight condition, in accordance with requirements of other District rules for such equipment.
  - (C) For purposes of this paragraph, the efficiency of a vapor recovery system shall be determined by making a comparison of controlled emissions to those emissions which would occur from a fixed cone roof tank holding the same organic liquid without a vapor control or vapor recovery system. The vapor recovery system shall have an efficiency of at least 95 percent by weight, or vent tank emissions to a fuel gas system.
- (d) Other Performance Requirements
- (1) A person shall not place, store or hold gasoline in any tank, with a capacity of between 950 liters (251 gallons) and 75,000 liters (19,815 gallons) unless such tank is equipped with a pressure-vacuum valve which is set to within 10 percent of the maximum allowable working pressure of the container, or is equipped with a vapor loss control device which complies with the requirements set forth in subdivision (c).
  - (2) The roof of any internal or external floating roof tank shall float on the organic liquid at all times (i.e., free of the roof leg supports) except when the tank is being completely emptied for cleaning, or repair. The process of emptying or refilling, when the roof is resting on leg supports, shall be continuous.
  - (3) If a tank has been gas-freed and is to be refilled with gasoline, the roof shall be refloated with water or by an equivalent procedure approved by the Executive Officer. Paragraphs (d)(2) and (d)(3) shall be inapplicable to gasoline storage tanks at bulk gasoline distribution terminals which do not have:
    - (A) existing facilities for treatment of waste water used to refloat the tank roof; or
    - (B) facilities for equivalent emission control when refloating the roof with organic liquid.

- (4) A fixed roof tank with an internal floating-type cover or a tank with an external floating roof cover shall not be used for storing organic liquids having a true vapor pressure of 11 psia (569 mm Hg) or greater under actual storage conditions.
  - (5) Replacement of a seal on a floating roof tank shall be allowed only if the replacement seal is chosen from the current list of seals approved by the Executive Officer. Category "A" seals shall be replaced only by Category "A" seals. Category "B" seals shall be replaced only by Category "A" or Category "B" seals. Category "C" seals shall be replaced only by Category "A" or Category "B" seals.
  - (6) Organic liquids listed on the addendum to this rule shall be deemed to be in compliance with the appropriate vapor pressure limits for the tank in which it is stored provided the actual storage temperature does not exceed the corresponding maximum temperature listed.
- (e) **Self-Inspection of Floating Roof Tanks**
- Any owner or operator of a floating roof tank(s) shall conduct self-inspections of its tank(s) according to the following procedures:
- (1) **Inspection and Maintenance Plan**
    - (A) Each owner or operator shall maintain a current or revised Inspection and Maintenance Plan approved by the Executive Officer. Each owner or operator constructing floating roof tank(s) subject to this rule shall submit an Inspection and Maintenance Plan, or a revision of its current Inspection and Maintenance Plan, to the Executive Officer prior to the completion of construction. The Inspection and Maintenance Plan shall include an inventory of floating roof tanks subject to this rule, the proposed self-inspection schedule, the number of certified persons to be dedicated to the program, any self-inspection procedures proposed in addition to those required by the District, and a copy of the owner or operator's safety procedures used for floating roof tanks. The tank inventory shall include tank identification number, maximum design capacity, product, shell type, dimensions, seal type and manufacturer, floating roof type, date of construction and location.
  - (2) **Identification Requirements**



- (A) All floating roof tanks subject to this rule shall be clearly and visibly identified by a sign on the outside wall for inventory, inspection and recordkeeping purposes.
- (B) Any change(s) in floating roof tank identification shall require prior written approval by the Executive Officer.
- (3) Owner or Operator Inspection Requirements
  - (A) All floating roof tanks subject to this rule shall be inspected by a certified person twice per year at 4 to 8 months intervals according to the procedures and guidelines set forth in Attachment B - "Inspection Procedures and Compliance Report Form."
  - (B) The primary and secondary seals shall be inspected by a certified person each time a floating roof tank is emptied and degassed. Gap measurements shall be performed on an external floating roof tank when the liquid surface is still but not more than 24 hours after the tank roof is refloated.
  - (C) The Executive Officer shall be notified in writing at least 2 weeks prior to the start of any tank-emptying or roof-refloating operation for planned maintenance of a tank.
- (4) Maintenance Requirements

Any floating roof tank which does not comply with any provision of this rule shall be brought into compliance within 72 hours of the determination of non-compliance.
- (f) Reporting and Recordkeeping Requirements
  - (1) The following shall apply to activities subject to the provisions of subdivision (e):
    - (A) All inspections shall be recorded on compliance inspection report forms approved by the Executive Officer as described in Attachment B - "Inspection Procedures and Compliance Report Form."
    - (B) All compliance inspection reports and documents shall be submitted to the Executive Officer either electronically or by hard copy within 5 working days of completion of the self-inspection.
    - (C) If a tank is determined to be in violation of the requirements of this rule, a written report shall be submitted to the Executive Officer

within 120 hours of the determination of non-compliance, indicating corrective actions taken to achieve compliance.

- (D) All records of owner or operator inspection and repair shall be maintained at the facility for a period of 3 years and shall be made available to the Executive Officer upon request.

(2) Emissions Reporting

- (A) An owner or operator shall provide emissions information, to the Executive Officer upon request, based on the parameters listed in Attachment C using AQMD's Annual Emissions Reporting Program or U.S. EPA's most recent version of TANKS 4.0 Program. The requirement shall apply to all organic liquid storage tanks without regard to exemptions specified in subdivision (g).

- (B) An owner or operator shall provide all upset emissions information associated with product change, repair, and turnover or any other excess emission incidents.

- (C) An owner or operator shall maintain records of emissions data for all organic liquid storage tanks for the most recent two (2) year period.

- (3) A person whose tanks are subject to this rule shall keep an accurate record of liquids stored in such containers, the vapor pressure ranges, the API gravity, the temperature, and the initial boiling points referenced.

(g) Exemptions

- (1) The provisions of this rule shall not apply to the following tanks, unless located at a Petroleum Facility and have Potential For VOC Emissions of 6 tons per year or more, provided the person seeking the exemption supplies proof of the applicable criteria sufficient to satisfy the Executive Officer:

- (A) Oil production tanks with a capacity of between 75,000 liters (19,815 gallons) and 159,000 liters (42,008 gallons) which have a properly maintained vapor-tight roof and are equipped with a pressure-vacuum valve which is set within 10 percent of the maximum allowable working pressure of the tank, are exempt from the control requirements of this rule when:

- (i) The organic liquid contents fail to comply with subdivision (c) only when heated for shipment, and such heating occurs

for not more than 48 hours and not more than once in any 20-day period; or

- (ii) The tank has a monthly average throughput of not more than 30 barrels of oil per day and was constructed prior to June 1, 1984.

(B) Tanks being brought into compliance within the time period specified in paragraph (e)(4).

- (2) The provisions of (d)(2) shall not apply to drain-dry breakout tanks that are subject to the provisions of Rule 1149 - Storage Tank And Pipeline Cleaning And Degassing.

(h) Test Methods

The following test methods and procedures shall be used to determine compliance with this rule. Other test methods determined to be equivalent after review by the staffs of the District, the Air Resources Board, and the U.S. EPA, and approved in writing by the District Executive Officer may also be used.

- (1) Efficiency of a vapor recovery system specified in subparagraph (c)(3)(C) shall be determined according to SCAQMD Method 501.1 for the determination of total organic compound emissions. EPA Reference Methods 25 or 25A may be used, as applicable, in place of SCAQMD Method 25.1 specified in Method 501.1. An efficiency determined to be less than established by this rule through the use of any of the above-referenced test methods shall constitute a violation of the rule. Baseline emissions shall be calculated by using the criteria outlined in American Petroleum Institute Bulletin 2518.
- (2) Exempt compounds shall be determined according to SCAQMD Method 303. For the purpose of testing the efficiency of a vapor recovery system, exempt compounds shall be determined according to EPA Reference Method 18 or ARB Method 422. Any test method(s) for exempt compounds which cannot be identified through these referenced test methods shall be specified by the owner or operator seeking an exemption and shall be subject to approval in accordance with the procedures set forth above in this subdivision.
- (3) The Reid vapor pressure specified in paragraph (b)(6) and the Reid vapor pressure used in determining the true vapor pressure limit specified in paragraph (d)(4) shall be determined according to ASTM D-323-82

Vapor Pressure of Petroleum Products (Reid Method) or California Code of Regulations, Title 13, Section 2297, and converted to true vapor pressure using applicable nomographs in U.S. EPA AP-42, Fifth Edition, Volume 1, Chapter 7, or nomographs approved by the Executive Officer and U.S. EPA.

- (4) Notwithstanding the provisions of paragraph (h)(3), if a permit condition or District rule requires a demonstration of true vapor pressure of less than 5 mm Hg (0.1 psi) absolute, either of the following test methods may be used:
- (A) Organic liquids that are stored at ambient temperatures with a true vapor pressure of greater than 5 mm Hg (0.1 psi) absolute under actual storage conditions shall be determined as those with a flash point of less than 100 °F as determined by ASTM Method D-93 – 10a - Flash Point by Pensky-Martens Closed Cup Tester.
- (B) Organic liquids that are stored at above ambient temperatures with a true vapor pressure greater than 5 mm Hg (0.1 psi) absolute under actual storage conditions shall be determined as those whose volume percent evaporated is greater than ten percent at an adjusted temperature  $T_{Adj}$  as determined by ASTM Method D-86 – 11a - Distillation of Petroleum Products at Atmospheric Pressure of:

$$T_{Adj} = 300 \text{ °F} + T_1 - T_a$$

Where:

$T_1$  = Liquid Storage Temperature (°F)

$T_a$  = Ambient Temperature (°F) = 70 °F

- (5) Notwithstanding the provisions of paragraph (h)(3), the true vapor pressure of crude oils and distillates shall be determined, at actual storage conditions, by converting Reid vapor pressure using the appropriate API nomograph found in U.S. EPA AP-42, Fifth Edition, Volume 1, Chapter 7, or API nomograph found in API Publication 2517, Second Edition, February 1980. The true vapor pressure of crude oils with an API gravity of 26.0 or less, may be measured using the Lawrence Berkeley National Laboratory “Test Method for Vapor Pressure of Reactive Organic

Compounds in Heavy Crude Oil Using Gas Chromatography.”, May 28, 2002.

- (6) Vapor tight condition specified in subparagraphs (c)(3)(A) and (c)(3)(B) shall be determined according to U.S. EPA's Reference Method 21 using an appropriate analyzer calibrated with methane.
- (7) API gravity is determined using the following:
  - (A) ASTM D-1298-99e2 Standard Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum Products by Hydrometer Method; or
  - (B) ASTM D-6822-02 Standard Test Method for Density, Relative Density, and API Gravity of Crude Petroleum and Liquid Petroleum Products by Thermohydrometer Method; or
  - (C) ASTM D-287-92(2000)e1 Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method).

## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## RULE 463 - ADDENDUM

Storage Temperatures Versus Actual Vapor Pressure  
(Gravity/Initial Boiling Points Referenced)

<u>Organic Liquids</u>	Reference Property		Temperature, °F	
	<u>A</u>	<u>B</u>	<u>0.5 psia</u>	<u>1.5 psia</u>
Crude Oils	12	--	--	--
	13	--	120	180
	14	--	85	145
	16	--	60	107
	18	--	55	93
	20	--	52	84
	22	--	49	77
	24	--	45	73
	26	--	42	70
	28	--	40	67
30	--	38	64	
Middle Distillates				
Kerosene	42.5	350	195	250
Diesel	36.4	372	230	290
Gas Oil	26.2	390	249	310
Stove Oil 23	421	275	340	
Jet Fuels				
JP-1	43.1	330	165	230
JP-3	54.7	110	--	25
JP-4	51.5	150	20	68
JP-5	39.6	355	205	260
JP-7	44-50	360	205	260
Fuel Oil				
No. 1	42.5	350	195	250
No. 2	36.4	372	230	290
No. 3	26.2	390	249	310
No. 4	23	421	275	340
No. 5	19.9	560	380	465
No. 6	16.2	625	450	--

## RULE 463 - ADDENDUM (Cont.)

<u>Organic Liquids</u>	Reference Property A - °API B - IBP, °F		Temperature, °F Not to Exceed Vapor Pressure	
	<u>A</u>	<u>B</u>	<u>0.5 psia</u>	<u>1.5 psia</u>
Asphalts				
60 - 100 pen.	--	--	490	550
120 - 150 pen.	--	--	450	500
200 - 300 pen.	--	--	360	420
Acetone	47.0	133	--	35
Acrylonitrile	41.8	173	30	60
Benzene	27.7	176	35	70
Carbon Disulfide	10.6	116 (lb/gal)	--	10
Carbon Tetrachloride	13.4	170	30	60
Chloroform	12.5	142 (lb/gal)	--	40
Cyclohexane	49.7	177	35	70
1,2 Dichloroethane	10.5	180 (lb/gal)	35	77
Ethyl Acetate	23.6	171	35	70
Ethyl Alcohol	47.0	173	45	83
Isopropyl Alcohol	47.0	181	45	87
Methyl Alcohol	47.0	148	--	50
Methylene Chloride	11.1	104 (lb/gal)	--	70
Methylethyl Ketone	44.3	175	30	70
1,1,1-Trichloroethane	11.2	165 (lb/gal)	60	100
Trichloroethylene	12.3	188 (lb/gal)	50	91
Toluene	30.0	231	73	115
Vinyl Acetate	19.6	163	--	60

**ATTACHMENT A**

**FLOATING ROOF TANK SEAL CATEGORIES**

**PRIMARY SEALS**

<u>Category A</u>	<u>Category B</u>	<u>Category C</u>
1. Liquid mounted multiple wipers with drip curtain and weight	1. Liquid mounted single wiper with drip curtain and weight	1. Liquid mounted single wiper
2. Liquid mounted mechanical shoe	2. Liquid mounted double foam wipers with vapor curtain	2. Liquid mounted foam log
	3. Vapor mounted primary wiper	3. Liquid mounted foam log with vapor curtain
	4. Vapor mounted E wiper	4. Liquid mounted resilient toroid type liquid filled log
	5. Vapor mounted double wipers	5. Vapor mounted foam log/bag
	6. Vapor mounted double foam wipers	6. Vapor mounted foam wiper
	7. Vapor mounted multiple wipers	

**SECONDARY SEALS**

<u>Category A</u>	<u>Category B</u>	<u>Category C</u>
1. Multiple wipers	1. Single wiper	1. Liquid mounted wiper
		2. Foam log/bag
		3. Maloney

Criteria used for categorization of floating roof tank seals:

1. Emission control effectiveness design
2. Ability to maintain contact with tank wall
3. Longevity in service



## ATTACHMENT B

### INSPECTION PROCEDURES AND COMPLIANCE REPORT FORM

#### Equipment Needed:

Explosimeter (for internal floating roof tanks), liquid resistant measuring tape or device, tank probe (to measure gaps in tank seals - 1/8 inch, 1/2 inch, 1-1/2 inch), flashlight.

#### Inspection Procedures:

1. The findings of all tank self-inspections, whether completed or not, shall be recorded on the Rule 463 Compliance Report form prescribed by the Executive Officer and submitted to the District's Refinery Section in accordance with the rule's requirements. If an inspection is stopped before completion, indicate the reason for this action in the Comments section of the compliance report form.
2. During compliance inspection, the person(s) conducting the inspection must have a copy of the Permit to Operate or Permit to Construct pertinent to the tank being inspected. Any discrepancies between the permit equipment description and the existing tank or the permit conditions and the actual operating conditions of the tank as verified during inspection must be recorded in the Comments section of the compliance report form.
3. Inspect the ground level periphery of each tank for possible leaks in the tank shell. Complete the tank information section (D) on the report.
4. For floating roof tanks containing organic liquid not subject to the provisions of subdivision (c) of Rule 463, conduct only steps 1 through 3 of this attachment. For all other floating roof tanks, conduct steps 5 through 7 as applicable.
5. For external floating roof tanks:
  - o From the platform, conduct an overall visual inspection of the roof and check for obvious permit or rule violations. Record the information as shown under section F of the compliance report form.
  - o During visual inspection of the roof, check for unsealed roof legs, open hatches, open emergency roof drains or vacuum breakers and record the findings on the report accordingly. Indicate presence of any tears in the fabric of both seals.
  - o After the visual inspection, conduct an inspection of the entire secondary seal using the 1/8" and 1/2" probes. Record the gap data in section F(4) of the report.
  - o Conduct an inspection of the entire primary seal using the 1/8", 1/2", and 1 1/2" probes. Inspect the primary seal by holding back the secondary seal. Record the gap data in section F(5) of the report.

- o Record all cumulative gaps between 1/8 inch and 1/2 inch; between 1/2 inch and 1-1/2 inch; and in excess of 1-1/2 inches, for both primary and secondary seals in section G of the report. Secondary seal gaps greater than 1/2 inch should be measured for length and width, and recorded in Comments under section (J) of the report.
6. For internal floating roof tanks:
- o Using an explosimeter, measure the concentration of the vapor space above the internal floating roof in terms of lower explosive limit (LEL), and record the reading in section (E) of the report.
  - o Conduct a visual inspection of the roof openings and the secondary seal, if applicable, and record findings on the report.
7. Complete all necessary calculations and record all required data accordingly on the report.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
RULE 463 COMPLIANCE REPORT

\*\*PLEASE COMPLETE FORM LEGIBLY IN BLACK INK\*\*

Tank No. \_\_\_\_\_ SCAQMD Permit No. \_\_\_\_\_ Inspection Date \_\_\_\_\_ Time \_\_\_\_\_  
Is This a Follow-up Inspection? No  Yes  If yes, Date of Previous Inspection \_\_\_\_\_

A. COMPANY INFORMATION:

Company Name \_\_\_\_\_  
Location Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_  
Mailing Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_  
Contact Person \_\_\_\_\_ Title \_\_\_\_\_  
Phone \_\_\_\_\_

B. INSPECTION CONDUCTED BY:

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company Name \_\_\_\_\_ Phone \_\_\_\_\_  
Mailing Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

C. TANK INFORMATION:

Capacity \_\_\_\_\_ (bbls) Installation Date \_\_\_\_\_ Tank Diameter \_\_\_\_\_ (ft) Tank Height \_\_\_\_\_ (ft)  
Product Type \_\_\_\_\_ Product RVP \_\_\_\_\_  
Type of Tank: Riveted  Welded  Other  (describe) \_\_\_\_\_  
Color of Shell \_\_\_\_\_ Color of Roof \_\_\_\_\_  
Roof Type: Pontoon  Double Deck  Other(describe) \_\_\_\_\_  
External floating roof  Internal floating roof

D. GROUND LEVEL INSPECTION:

- 1) Product Temperature \_\_\_\_\_ °F 2) Product level \_\_\_\_\_ (ft)
- 3) List type and location of leaks found in tank shell.  
\_\_\_\_\_
- 4) List any discrepancies between the existing equipment and the equipment description on the Permit.  
\_\_\_\_\_
- 5) Is tank in compliance with Permit conditions? No  Yes  If no, explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

E. INTERNAL FLOATING ROOF TANK:

- 1) Check vapor space between floating roof and fixed roof with explosimeter. \_\_\_\_\_ % LEL
- 2) Conduct visual inspection of roofs and secondary seals, if applicable.
- 3) Are all roof openings covered? No  Yes  If no, explain in Comments section (J) and proceed to part (H)(6).

F. EXTERNAL FLOATING ROOF TANK:

**Rule 463 (Cont.)**

**ATTACHMENT B (Cont.)  
(Amended November 4, 2011)**

- 1) On the diagram (below) indicate the location of the ladder, roof drain(s), anti-rotation device(s), platform, gauge well, and vents or other appurtenances. *Note information in relation to North (to the top of the worksheet).*
- 2) Describe any uncovered openings found on the roof in the Comments section (J).
- 3) Identify any tears in the seal fabric. Describe and indicate on diagram (below):

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4) Secondary Seal Inspection

- a) Type of Secondary Seal: \_\_\_\_\_
- b) Does 1/2" probe drop past seal?      No       Yes       if yes, measure length(s) and show on diagram
- c) Does 1/8" probe drop past seal?      No       Yes       if yes, measure length(s) and show on diagram.
- d) Record dimensions of gap for gaps      > 1/8" \_\_\_\_\_ > 1/2" \_\_\_\_\_

*NOTE: Record the actual width and cumulative length of gaps in feet and inches.*

*(Do not include gaps > 1/2" in 1/8" measurements)*

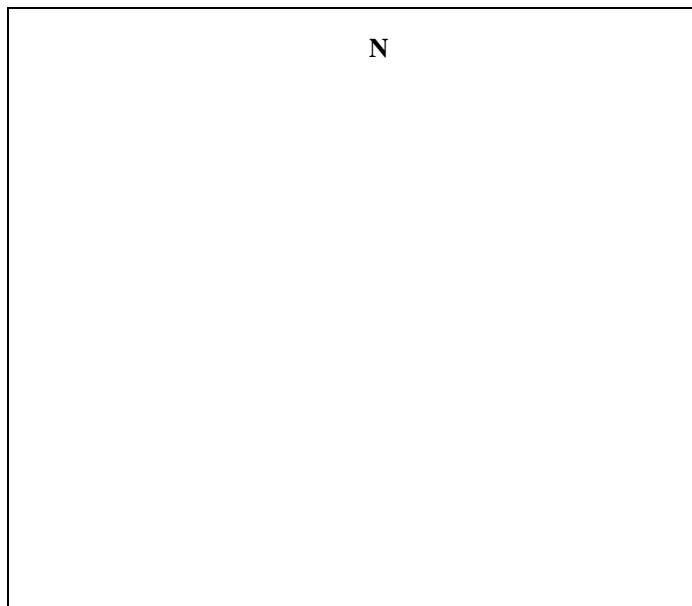
5) Primary Seal Inspection

- a) Type of Primary Seal:       Shoe;       Tube;       Other      \_\_\_\_\_
- b) (shoe seal) does 1-1/2" probe drop past seal?      No       Yes ;      if yes, measure length(s) and show on diagram.
- c) (shoe seal) does 1/2" probe drop past seal?      No ;      Yes ;      if yes, measure length(s) and show on diagram.
- d) (tube seal) does 1/2" probe drop past seal?      No       Yes       if yes, measure (length(s) and show on diagram.
- e) (all seal types) does 1/8" probe drop past seal?      No       Yes       if yes, measure (length(s) and show on diagram.
- f) Record dimensions of gaps for gaps      > 1/8" \_\_\_\_\_ > 1/2" \_\_\_\_\_

> 1-1/2" \_\_\_\_\_ *NOTE: Record the actual width and cumulative length of gaps in feet and inches.*

*(Do not include gaps > 1/2" in 1/8" measurements, or gaps > 1-1/2" in 1/2" measurements)*

NOTE: Show defects using symbols. Show seal gaps and lengths.



**LEGEND:**

Equipment:

- Antirotational device
- O Gauge well
- T Leg stand
- ⊗ Roof drain
- \* Emergency roof drain
- ∞ Vacuum breaker
- σ Vent
- Platform & ladder

Defects:

- ⊖ Leg top
- ⊥ Leg pin
- σ Open hatch
- ∖ Torn seal
- |-P-| Primary seal gap
- |-S-| Secondary seal gap

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
RULE 463 COMPLIANCE REPORT**

*\*\*PLEASE COMPLETE FORM LEGIBLY IN BLACK INK\*\**

Tank No. \_\_\_\_\_ SCAQMD Permit No. \_\_\_\_\_

**IF INTERNAL FLOATING ROOF TANK, PROCEED TO PART H(6).**

**G. CALCULATIONS - complete all applicable portions of the following:**

Record dimensions of indicated gaps [from F(4)(d), F(5)(b), and F(5)(f)]. Record in feet and inches.

Gaps in primary seal between 1/8 and 1/2 inch: \_\_\_\_\_

Gaps in primary seal between 1/2 and 1-1/2 inch: \_\_\_\_\_

Gaps in primary seal greater than 1-1/2 inches: \_\_\_\_\_

Gaps in secondary seal between 1/8 and 1/2 inch: \_\_\_\_\_

Gaps in secondary seal greater than 1/2 inch: \_\_\_\_\_

Multiply diameter (ft) of tank to determine appropriate gap limits:

5% circumference = diameter X 0.157 = \_\_\_\_\_ 60% circ. = diam. X 1.88 = \_\_\_\_\_

10% circumference = diameter X 0.314 = \_\_\_\_\_ 90% circ. = diam. X 2.83 = \_\_\_\_\_

30% circumference = diameter X 0.942 = \_\_\_\_\_ 95% circ. = diam. X 2.98 = \_\_\_\_\_

**H. DETERMINE COMPLIANCE STATUS OF TANK:**

- |    |  |                             |                              |
|----|--|-----------------------------|------------------------------|
| 1) | Were any openings found on the roof?   | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
| 2) | Were any tears in the seals found:   | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
| 3) | Is the product level lower than the level at which the roof would be floating? | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
| 4) | Secondary Seal:  |                             |                              |
|    | Did 1/2" probe drop between shell and seal?                                    | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | Did cumulative 1/8" - 1/2" gap exceed 95% circumference length?                | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
| 5) | Primary Seal   |                             |                              |
|    | Shoe   |                             |                              |
|    | Did 1-1/2" probe drop between shell and seal?                                  | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | Did cumulative 1/2" - 1-1/2" gap exceed 30% circumference length, and          |                             |                              |
|    | Did cumulative 1/8 - 1/2" gap exceed 60% circumference length?                 | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | Did any <u>single continuous</u> 1/8" - 1-1/2" gap exceed 10% circ. length?    | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | Tube   |                             |                              |
|    | Did 1/2" probe drop between shell and seal                                     | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | Did cumulative 1/8" - 1/2" gap exceed 95% circumference length?                | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
| 6) | Internal floating roof (installed before 6/1/84) did LEL exceed 50%            | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | (installed after 6/1/84) did LEL exceed 30%?                                   | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
| 7) | Does tank have permit conditions?  | No <input type="checkbox"/> | Yes <input type="checkbox"/> |
|    | Does tank comply with these conditions?  | No <input type="checkbox"/> | Yes <input type="checkbox"/> |

**I. IF INSPECTION WAS TERMINATED PRIOR TO COMPLETION FOR ANY REASON, PLEASE EXPLAIN:**

\_\_\_\_\_

\_\_\_\_\_



DATA REPORTING REQUIREMENT FOR ROOF TANKS

The data items shall include, but not be limited to, the following:

- | A. External Floating Roof Tank                 | B. Internal Floating Roof Tank                  | C. Fixed Roof Tank                             |
|--|---|--|
| 1. Tank I.D.                                   | 1. Tank I.D.                                    | 1. Tank I.D.                                   |
| 2. Product Code                                | 2. Product Code                                 | 2. Product Code                                |
| 3. Type of Floating Roof Seal                  | 3. Type of Floating Roof Seal                   | 3. Vent Type to Vapor Recovery System          |
| 4. Shell Construction                          | 4. Shell Construction                           | *4. Average Stock Storage Temperature          |
| 5. Reid Vapor Pressure                         | 5. Reid Vapor Pressure                          | 5. True Vapor Pressure                         |
| *6. Average Stock Storage Temperature          | *6. Average Stock Storage Temperature           | 6. Tank Diameter                               |
| 7. True Vapor pressure                         | 7. True Vapor Pressure                          | *7. Vapor Molecular Weight                     |
| 8. Tank Diameter                               | 8. Tank Diameter                                | 8. Average Outage                              |
| *9. Wind Speed Exponent                        | *9. Wind Speed Exponent                         | *9. Average Daily Temperature Change           |
| *10. Average Wind Velocity                     | *10. Average Wind Velocity                      | 10. Throughput                                 |
| *11. Seal Factor                               | *11. Seal Factor                                | 11. Turnover Factor                            |
| *12. Product Factor                            | *12. Product Factor                             | *12. Turnovers Per Year                        |
| *13. Vapor Molecular Weight                    | *13. Vapor Molecular Weight                     | *13. Adjustment Factor for Small Tank          |
| *14. Clingage Factor                           | *14. Clingage Factor                            | *14. Paint Factor                              |
| 15. Throughput                                 | 15. Throughput                                  | *15. Crude-Oil Factor (Breathing)              |
| *16. Density of Liquid Stock                   | *16. Density of Liquid Stock                    | *16. Crude-Oil Factor (Working)                |
| 17. Total Number of Different Type of Fitting  | *17. Number of Columns                          | 17. Breathing Loss                             |
| 18. Total Roof Fitting Loss Factor             | *18. Effective Column Diameter                  | 18. Working Loss                               |
| 19. Vapor Pressure Function                    | 19. Total Number of Different Types of Fittings | 19. Total Loss (Without Vapor Recovery)        |
| 20. Roof Fitting Loss                          | *20. Total Deck Fitting Loss Factor             | *20. Vapor Recovery System Efficiency          |
| 21. Standing Loss                              | 21. Vapor Pressure Function                     | 21. Total Loss (With Vapor Recovery)           |
| 22. Withdrawal Loss                            | *22. Deck Seam Length Factor                    | 22. Number of Excess Upset Emissions Incidents |
| 23. Total Loss                                 | *23. Deck Seam Loss per Unit                    | 23. Total Excess Upset Emissions               |
| 24. Number of Excess Upset Emissions Incidents | 24. Deck Seam Loss                              |  |
| 25. Total excess Upset Emissions               | 25. Deck Fitting Loss                           |  |
|  | 26. Standing Loss                               |  |
|  | 27. Withdrawal Loss                             |  |
|  | 28. Total Loss                                  |  |
|  | 29. Number of Excess Upset Emissions Incidents  |  |
|  | 30. Total Excess Upset Emissions                |  |

\* Default values are available from the District

The Data format and order shall be specified and approved by the Executive Officer.