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Standards of Performance for New Stationary Sources: Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels); Final Rule

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[AD-FRL-3162-7]

Standards of Performance for New Stationary Sources: Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Standards of performance for volatile organic liquid (VOL) storage vessels (including petroleum liquid storage vessels) were proposed in the **Federal Register** on July 23, 1984 (49 FR 29698). That notice included revisions to the priority list to include VOL storage vessels; revisions to the standards of performance for petroleum liquid storage vessels constructed after June 11, 1973, and prior to May 19, 1978 (38 FR 15406); and revisions to the standards of performance for petroleum liquid storage vessels constructed after May 18, 1978 (45 FR 23374), and prior to July 23, 1984. This action promulgates those revisions and the standards of performance for VOL storage vessels (including petroleum liquid storage vessels). These standards implement Section 111 of the Clean Air Act and are based on the Administrator's determination that synthetic organic chemical manufacturing industry and VOL storage vessels and handling equipment cause or contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. The intended effect of these standards is to require all new, modified, and reconstructed VOL storage vessels to use the best demonstrated system of continuous emission reduction, considering costs, nonair quality health, and environmental and energy impacts.

DATE: Effective April 8, 1987.

Under section 307(b)(1) of the Clean Air Act, judicial review of the actions taken by this notice is available *only* by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

Incorporation by Reference

The incorporation by reference of certain publications in these standards is approved by the Director of the Office of the **Federal Register** as of April 8, 1987.

ADDRESSES: *Background Information Document.* The background information document (BID) for the promulgated standards may be obtained from the U.S. EPA Library (MD–35), Research Triangle Park, North Carolina 27711, telephone number (919) 541–2777. Please refer to "Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels)—Background Information for Promulgated Standards" (EPA–450/3–81–003b). The BID contains (1) a summary of all the public comments made on the proposed standards and the Administrator's response to the comments, (2) a summary of the changes made to the standards since proposal, and (3) the final Environmental Impact Statement that summarizes the impacts of the standards.

Docket: A docket, number A–80–51, containing information considered by EPA in development of the promulgated standards, is available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (LE–131), West Tower Lobby, Gallery 1, 401 M Street, SW., Washington, DC 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Doug Bell, Standards Development Branch, Emission Standards and Engineering Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541–5578.

SUPPLEMENTARY INFORMATION:

I. The Standards

Standards of performance for new sources established under section 111 of the Clean Air Act reflect:

> . . . application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, any nonair quality health and environmental impacts and energy requirements) the Administrator determines has been adequately demonstrated [Section 111(a)(1)].

For convenience, this will be referred to as "best demonstrated technology" or "BDT."

The promulgated standards apply to new, modified, or reconstructed storage vessels, regardless of location, with a capacity greater than or equal to 40 cubic meters (m^3) (≅10,000 gallons [gal]) and storing a VOL from which volatile organic compounds (VOC's) can be emitted to the atmosphere except for vessels specifically exempted from the standards in § 60.110b(d).

The standards requires that new, modified, or reconstructed storage vessels, regardless of location, with (1) a capacity greater than or equal to 151 m^3 (≅40,000 gal) and storing a VOL with a maximum true vapor pressure greater than or equal to 5.2 kPa (≅0.75 psia) but less than 76.6 kPa (≅11.1 psia) or (2) with a capacity greater than or equal to 75 m^3 (≅20,000 gal) but less than 151 m^3 (≅40,000 gal) and storing a VOL with a maximum true vapor pressure greater than or equal to 27.6 kPa (≅4.0 psia) but less than 76.6 kPa (≅11.1 psia) be equipped with:

1. A fixed roof in conjunction with an internal floating roof equipped with a liquid-mounted or mechanical shoe primary seal, either flexible fabric sleeve seals on pipe columns or gasketed sliding covers on built-up or pipe columns, slit fabric membranes or sample wells, and gasketed covers on roof fittings; or

2. An external floating roof equipped with a liquid-mounted or mechanical shoe primary seal and a continuous rim-mounted secondary seal, with both seals meeting certain minimum gap requirements, and gasketed covers on roof fittings; or

3. A closed vent system and a 95 percent effective control device. Alternative means of emission limitation may be approved by the Administrator after notice and an opportunity for a public hearing.

The standards require that each new, modified, or reconstructed storage vessel, regardless of location, with a capacity greater than or equal to 75 m^3 (≅20,000 gal) and storing a VOL with a maximum true vapor pressure greater than or equal to 76.6 kPa (≅11.1 psia) be equipped with a closed vent system and 95 percent effective control device.

To determine applicability, the standards require that the owner or operator of each new, modified, or reconstructed storage vessel with a capacity greater than or equal to 40 m^3 (≅10,000 gal) and storing a VOL maintain a record of the capacity of the storage vessel. The standards also require that the owner or operator of each new, modified, or reconstructed storage vessel with (1) a capacity greater than or equal to 75 m^3 (≅20,000 gal) but less than 151 m^3 (≅40,000 gal) and storing a VOL with a maximum true vapor pressure greater than or equal to 15.0 kPa (≅2.2 psia) but less than 27.6 kPa (≅4.0 psia) or with (2) a capacity greater than or equal to 151 m^3 (≅40,000 gal) and storing a VOL with a maximum true vapor pressure greater than or

equal to 3.5 kPa (≅0.51 psia) but less than 5.2 kPa (≅0.75 psia) maintain a record of maximum true vapor pressure of the VOL stored.

Standards for Internal Floating Roof Vessels. The standards for internal floating roof vessels (IFR's) have additional requirements that are not in the previous petroleum liquid storage vessel new source performance standards (NSPS); these include a liquid-mounted primary seal, gasketed fittings, and either flexible fabric sleeve seals on pipe columns or gasketed sliding covers on built-up or pipe columns. The new requirements do not apply retroactively to petroleum liquid storage vessels already covered by Subparts K or Ka; only vessels on which construction, modification, or reconstruction commences after July 23, 1984, are subject to the new requirements.

The owner or operator of each IFR subject to these standards is required to inspect the internal floating roof and seals to ensure that the equipment is maintained and operated properly. The owner or operator is required to inspect the floating roof and seals prior to filling the vessel with VOL to ensure that there are no holes in the internal floating roof and that there are no holes, tears, or other openings in the seals. Every 12 months thereafter, the owner or operator is required to inspect visually the internal floating roof and primary seal from the fixed roof. If there are holes in the internal floating roof or if VOL is accumulated on the roof, the owner or operator would have the option of repairing the control equipment within 45 days or emptying the storage vessel within 45 days. At least once every 10 years, the owner or operator is required to empty the storage vessel and to inspect the internal floating roof, the primary seal, and the secondary seal, if one exists. The owner or operator has the option of conducting an internal inspection of the internal floating roof at least once every 5 years in place of conducting an annual visual inspection if a double-seal (primary and secondary) system has been installed. In any case, the standards require that all defects in the control equipment be repaired before the vessel is refilled.

Standards for External Floating Roof Vessels. The requirements of the standards for external floating roof vessels (EFR's) are identical to the requirements in the previous petroleum liquid storage vessel standards except that the type of primary seal is restricted to liquid-mounted or mechanical shoe seals, that gasketed covers are required for roof fittings, and that a continuous rim-mounted secondary seal is required.

The owner or operator of each EFR subject to these standards is required to inspect the seals prior to filling the vessel with VOL to ensure that there are no holes, tears, or other openings in the seals. Measurements of gaps between the seal and the vessel wall for both primary and secondary seals are required for EFR's to ensure that the equipment is maintained and operated properly. The owner or operator is required to measure the gaps in both the primary and secondary seals within 60 days of introducing VOL into the vessel. Every 12 months thereafter, the owner or operator is required to perform secondary seal gap measurements. At least once every 5 years, the owner or operator must perform primary seal gap measurements. Measured gaps that exceed specified limitations must either be repaired within 45 days or the storage vessel must be emptied within that time.

The reporting and recordkeeping provisions of Subpart Ka are amended to be consistent with the provisions of Subpart Kb, which require that reports be made only when the measured gaps exceed the specified limitations. These reports shall be submitted to EPA within 30 days of the date of the report. Otherwise, records of gap measurements are kept by the owner or operator.

Standards for Closed Vent Systems and Control Devices. The owner or operator of each affected facility equipped with a closed vent system designed to duct all emissions to a 95 percent effective control device is required to submit to the Administrator the system design specifications and an operation and maintenance plan. The owner or operator is required to operate, maintain, and monitor the system in accordance with the plans submitted to the Administrator.

Selection of Format for the Standards. Section 111 of the Clean Air Act requires that an emission standard be developed whenever it is feasible. Section 111(h) states that "if, in the judgment of the Administrator, it is not feasible to prescribe or enforce a standard of performance, he may instead promulgate a design, equipment, work practice, or operational standard or combination thereof . . . ." The term "not feasible" is applicable if the emissions cannot be captured and vented through a vent or stack designed for that purpose or if the application of a measurement methodology is not practicable because of technological or economic limitations.

Determining compliance with an emission standard for storage vessels would require the measurement of emissions from each storage vessel; therefore, the emissions would have to be vented in a manner that would allow the measurement of pollutant concentration and flow rates. Internal and external floating roof vessels typically do not have a conveyance designed to capture the emissions or a stack or vent through which the emissions pass to the atmosphere, nor is it practical to design such a capture system for these vessels. Therefore, the Administrator concluded that a performance standard is not feasible for either IFR's or EFR's.

A performance standard was also considered for closed vent systems and control devices. A standard based on a mass emission limitation was determined to be infeasible because a mass emission limitation value cannot be selected that would be achievable in the worst-case situation (i.e., large vessel capacity, high vapor pressure, and high utilization rate) and that, at the same time, would prevent the construction of closed vent systems and control devices that are less effective than BDT. A standard based on reduction efficiency was also determined to be infeasible. Emissions from storage vessels are variable and are often too low to measure. Total emissions from vessels have not been measured, and to do so would require that the operation of the vessel be strictly controlled during the testing period. Because of methodology problems, it may not be possible to measure simultaneously both the flow rate and the concentration. Thus, the accuracy of the measurements may be in doubt. For these reasons, it was concluded that it was impracticable to measure the emissions exiting the vessel or captured by the control system. Therefore, it was concluded that reduction efficiency standards are not feasible for closed vent systems and control devices.

A "design, equipment, work practice, or operational standard or combination thereof" was established. The equipment that comprises BDT for vessels storing affected liquids with vapor pressures less than 76.6 kPa (≅11.1 psia) consists of an internal floating roof with a liquid-mounted or mechanical shoe primary seal and controlled fittings or an external floating roof with a liquid-mounted or mechanical shoe primary seal, a continuous rim-mounted secondary seal, and gasketed fittings. Operational and work practice requirements, which

consist of inspection and repair requirements, are necessary to ensure the continued integrity of the control equipment. Therefore, the Administrator concluded that the format of the standards for these vessels should include a combination of a design, equipment, work practice, and operational standards.

A "design, equipment, work practice, or operational standard or combination thereof" was also established for storage vessels equipped with closed vent systems and control devices. A reduction efficiency design standard can account for the wide variation in emission and flow rates being vented from the vessel, and it would require the use of closed vent systems and 95 percent effective control devices on all vessels equipped with these controls. Operational requirements, which consist, among other things, of inspection, repair, and work practice requirements, are necessary to ensure the proper operation and integrity of control equipment meeting a reduction efficiency design standard. Therefore, the Administrator concluded that the format of the standards for storage vessels equipped with closed vent systems and control devices should include a combination of a design, equipment, work practice, and operational standards.

II. Environmental Impacts

There has been no change in the environmental impacts since proposal. The promulgated standards would reduce the national VOC emissions from new, modified, and reconstructed storage vessels by about 31,100 megagrams (Mg) (34,300 tons) in 1988. The standards reduce the national VOC emissions from storage vessels with no adverse impacts on other aspects of the environment or on energy requirements.

III. Energy Impacts

There has been no change in the energy impacts since proposal. The control technologies that are the bases for the regulatory alternatives do not increase the power or energy requirements of VOL storage vessels. Therefore, no energy impacts are attributed to the standards.

IV. Cost Impacts

The total nationwide capital cost for affected facilities constructed through the fifth year of implementation to comply with the proposed standards has increased to $44.4 million from the nationwide capital cost of $15.6 million estimated at the time of proposal. The annualized cost for a typical plant controlled by the standards has increased from $2,350 to $3,200, and the initial capital cost has increased from $10,800 to $14,100. Since proposal, the cost of the liquid-mounted primary seal has been revised upward to $98.40/meter from $2.60/meter, and the expected life of the seals has been revised downward from 20 years to 10 years. The cost of installing fitting controls has also been revised. However, the standards still result in a net annualized credit in the fifth year (1988) due to the retention of liquids that would otherwise be lost.

V. Economic Impact

As discussed above, the standards result in a net annualized credit in the fifth year. For this reason, no price increases or other adverse economic impacts attributable to implementation of the standards are expected.

In addition to economic impacts, the cost effectiveness of alternative standards also was evaluated in order to determine the least costly way to reduce emissions and to assure that the controls required by this rule are reasonable relative to other regulations. In this case, the promulgated standards would reduce the operating costs of VOL storage vessels and produce a net annualized credit in the fifth year. Additional details can be found in the BID.

The environmental, energy, and economic impacts are discussed in greater detail in the BID for the proposed standards ("VOC Emissions From Volatile Organic Liquid Storage Tanks—Background Information for Proposed Standards" [EPA–450/3–81–003a]).

VI. Public Participation

Prior to proposal of the standards, interested parties were advised by public notice in the **Federal Register** (45 FR 73133) (November 4, 1980) of a meeting of the National Air Pollution Control Techniques Advisory Committee to dicuss the standards for VOL storage vessels recommended for proposal. This meeting was held on December 2, 1980. The meeting was open to the public, and each attendee was given an opportunity to comment on the standards recommended for proposal.

The proposed standards were published in the **Federal Register** on July 23, 1984 (49 FR 29698). The preamble to the proposed standards discussed the availability of the BID ("VOC Emissions From Volatile Organic Liquid Storage Tanks—Background Information for Proposed Standards" [EPA–450/3–81–003a]), which described in detail the regulatory alternatives considered and the impacts of those alternatives. Public comments were solicited at the time of proposal, and copies of the BID were distributed to interested parties.

The opportunity for interested persons to present data, views, or arguments concerning the proposed standards at a public hearing was provided. However, there were no requests to hold such a hearing, and, therefore, no hearing was held.

The public comment period was from July 23, 1984, to October 2, 1984. Twenty-three comment letters were received during the comment period concerning issues relative to the proposed standards of performance for VOL storage vessels. One late comment was also received. The comments have been carefully considered, and, where determined to be appropriate by the Administrator, changes have been made in the proposed standards.

VII. Significant Comments and Changes to the Proposed Standards

Comments on the proposed standards were received from industry, Federal and State agencies, and trade associations. A detailed discussion of these comments and responses can be found in the promulgation BID, which is referred to in the **ADDRESSES** section of this preamble. The summary of comments and responses in the promulgation BID serves as the basis for revisions that have been made to the standards between proposal and promulgation. In addition, several clarifications have been made to the standards. The changes involve clarification of procedural matters such as the length of time allowed to operators or owners of storage vessels to submit reports to the Agency regarding vessels in noncompliance, specific notification requirements when unplanned inspections occur, and the procedures followed by the Administrator in considering requests for permission to use alternate means of emission limitation.

The major comments and responses are summarized in this preamble. Most of the comment letters contained multiple comments. The comments have been divided into the following areas: Selection of Affected Facility; Emission Control Technology; and Reporting, Recordkeeping, and Inspection Requirements.

Selection of Affected Facility

Commenters requested that the vapor pressure and tank size cutoffs be maintained so that consistency with the existing regulations and with State implementation plans (SIP's) is

maintained at the levels described in Subparts K and Ka (10.4 kPa [≅1.5 psia] and 151 m^3 [≅40,000 gal]).

Section 111 requires EPA to set NSPS that reflect BDT. The EPA has identified BDT for classes of tanks covered by this standard and is, therefore, promulgating this NSPS reflecting BDT. Consistency with some SIP's or the previous standards (K and Ka) is not germane.

Commenters stated that no data are presented that show a significant reduction in emissions from vessels storing liquids with true vapor pressures between 3.5 and 10.4 kPa (0.51 and 1.5 psia) or that show that emissions from these vessels contribute to ozone formation. One commenter maintained that control of vessels storing liquids having vapor pressures between 3.5 and 10.4 kPa (0.51 and 1.5 psia) would not contribute greatly to the reduction in emissions and that such vessels are less cost effective to control than vessels storing liquids with vapor pressures above 10.4 kPa. Another commenter said that the emission reduction attributed to vessels of this size class is overstated at "for-hire" terminals because of the low turnover rate (approximately 5 per year) on these vessels. This commenter suggested that IFR's average at least 10 annual turnovers and fixed roof vessels average at least 50 annual turnovers before becoming subject to the control requirement.

The Agency reevaluated the cost effectiveness of controlling emissions from vessels storing VOL's in this vapor pressure range. The Agency recognizes that there will be variations in cost-effectiveness values within a class. In particular, certain subclasses of vessels (for example, vessels storing low vapor pressure liquids) may have unreasonable cost-effectiveness values, particularly when combined with other storage parameters such as low annual turnovers. Therefore, the Agency has limited the scope of the standards to preclude some of those vessels storing low vapor pressure chemicals that may have unreasonable cost-effectiveness values. This has been done by changing the vapor pressure cutoff from 3.5 to 5.2 kPa (0.51 to 0.75 psia). While the exact number of vessels excluded by the revision of the vapor pressure cutoff is not known, the change in emission reduction is small.

It should be noted that cost effectiveness is not a measure of the economic impact of the standards to individual owners. Rather, it is a measure of the overall cost efficiency for various classes of sources subject to the standards. Because it is practical to do so without affecting the objectivity and enforceability of the standards, the Agency has limited the scope of the standards to preclude some of the vessels which have unreasonable cost-effectiveness values. Nevertheless, variation in cost-effectiveness values among individual facilities does remain. This is expected and is not unreasonable.

Furthermore, these cost-effectiveness estimates do not reflect the indirect environmental benefits of these standards. Emissions from storage of some potentially toxic chemicals will be controlled under these standards. It was not possible to quantify these benefits in this case; nonetheless, the existence of these benefits, in light of the difficulty of making additional distinctions among classes of tanks, was a factor in the Agency's determination that the cost effectiveness of the standards is reasonable.

The Agency also considered an exemption based on turnovers. The Agency evaluated the cost effectiveness of BDT controls for a typical chemical industry tank (a volume of 606 m^3 [160,000 gal], diameter and height of 9.2 m [30 ft], and a stored liquid vapor pressure of 6.9 kPa [1.0 psia]). Tanks with this volume associated with the chemical industry typically turn over 60 times per year. However, the analysis was conducted assuming 10 turnovers per year to evaluate the cost effectiveness of controls at a low turnover rate. The cost effectiveness of BDT is about $1,140/Mg for this case.

The Agency's analysis of tanks larger than 151 m^3 (40,000 gal) was based on an annual turnover rate of 50. Because the number of turnovers does play a role in the cost effectiveness of BDT controls for fixed roof tanks, the Agency examined the impact on the cost effectiveness of BDT controls of low turnover rates in this vapor pressure range (3.5 to 10.4 kPa). As the number of turnovers decreases, fixed roof tank emissions will decrease; the emission reduction obtained by BDT will decrease; and, therefore, BDT will become less cost effective.

The average volume of a tank at a "for-hire" terminal is about 3,300 m^3 (871,000 gal). The emission reductions obtained by constructing a BDT internal floating roof tank in place of a fixed roof tank are about 7.2 Mg/yr and 5.3 Mg/yr at 5 and 2.5 turnovers, respectively; and the associated cost-effectiveness values are $520/Mg rounded and $870/Mg rounded at 5 and 2.5 turnovers, respectively.

An exemption based on annual turnovers is not possible without affecting the objectivity and enforceability of the standards. The number of turnovers that any vessel storing VOC's undergoes is not constant from year to year and cannot be predicted with certainty at the time the vessel is built or reconstructed. As such, any standards designed to exempt individual vessels that may have low turnover rates would be impractical both from an enforcement perspective and from the owner's perspective.

The Agency has concluded that, even in cases of low turnover rates, the control of vessels storing liquids with vapor pressures between 5.2 and 10.4 kPa (0.75 and 1.5 psia) is reasonable. As discussed above, a cutoff based on turnovers is not practical even for those instances where cost-effectiveness values are high. Therefore, because the overall cost of the standards produces a net credit and because an exemption for the subclass of low turnover vessels is not practical, no changes based on turnovers were made to the proposed cutoffs in these final standards. However, the final standards will reflect the change in vapor pressure cutoff.

The emission reduction achieved between 3.5 and 10.4 kPa (0.75 and 1.5 psia) cannot be quantified. However, the cost effectiveness of typical tanks in this vapor pressure range is reasonable. Also, the overall emission reduction of the standards is 31,000 Mg (34,300 tons) and results in a net annual credit. Therefore, this cutoff is reasonable.

Commenters also requested that EPA reevaluate the inclusion of small volume (75– to 151-m^3 [20,000- to 40,000-gal]) vessels by using a range of annual turnovers because at low turnover rates (fewer than 10 per year) controls for these vessels are not cost effective. Another commenter said that the turnover rate for 75– 10 151-m^3 (20,000- to 40,000-gal) vessels in the for-hire terminal industry is as low as 2.5 to 5 times per year. This commenter said that EPA's selection of higher turnover rates results in overstated overall emission reduction and understated cost-effectiveness values.

The Agency examined the possibility of significant numbers of small volume (75- to 151-m^3 [20,000- to 40,000-gal]), low tunover vessels being located at terminals. While some petroleum products such as gasoline meet the small volume vapor pressure cutoff (27.6 kPa [4 psia]), these products are typically stored in much larger tanks. In the chemical industry, only 0.3 percent of total storage volume is shipped and, thereby, available for storage at for-hire terminals. Of this volume shipped, less than 13 percent consists of liquids in the higher vapor pressure range (27.6 to 76.6 kPa [4 to 11.1 psia]) that would be affected under the standards in this size

range. Therefore, the Agency considers it unlikely that a significant number of storage vessels in this size range would be affected by the standards. However, the Agency examined the cost effectiveness of BDT controls in a 113-m^3 (30,000-gal) tank for four specific liquids stores at terminals and at two turnover rates (5 and 10 per year). The cost effectiveness at 5 turnovers annually ranges from $920/Mg to $2,570/Mg and averaged $1,500/Mg. The cost effectiveness at 10 turnovers annually ranged from a savings of $160/Mg to a cost of $890/Mg and averaged $310/Mg. While BDT for these low turnover vessels results in higher cost-effectiveness values than those for vessels with higher turnovers, these costs are reasonable considering the difficulty of discriminating between tanks with different turnover rates. As noted previously, larger vessels, which are more typical in the for-hire terminal industry, are even more cost effective to control.

The actual cost effectiveness of BDT controls is dependent upon tank-specific parameters (diameter, height, and volume) and product-specific parameters (vapor pressure, molecular weight, and chemical formulation) that cannot be predicted and may be higher or lower than those presented. Because of these variable parameters, an objective exemption that would exempt only those vessels that always have low turnovers would be complex and impractical. Therefore, because the average cost effectiveness is reasonable even at lower turnovers, no changes in the volume cutoffs have been made in the final rule.

Commenters requested an exemption for storage vessels located at retail gasoline service stations on the basis that it would be an unnecessary recordkeeping burden for both the operators of smaller affected vessels not subject to the control requirements and the regulatory agencies that would have to keep the records. The commenters stated their belief that it was not EPA's intent to include underground storage vessels at gasoline service stations as affected facilities.

It is true that EPA did not intend to affect vessels at gasoline service stations with these standards. Consequently, no evaluation of the possible economic impact of these standards on retail gasoline marketers was performed. Emissions from retail gasoline marketers are part of the gasoline marketing source category (Petroleum Transportation and Marketing, 40 CFR 60.16, category No. 23) as well as part of the VOL storage category. The decision as to whether to regulate emissions from these vessels is being made in a regulatory decision package for that source category. Therefore, the Agency decided to exempt storage vessels at retail gasoline service stations specifically from the final standards.

One commenter requested that the impact of the standards on bulk gasoline plant owners or operators be evaluated. The commenter was concerned that these firms, which are typically small businesses, would be unable to raise the capital necessary to install the equipment to comply with BDT.

According to the Small Business Administration's criteria for small businesses, bulk plants may be classified as such because they typically have fewer than 500 employees. The economic impacts of the standards on model bulk plants were examined to see if adverse impacts (closure of the facility or inability to construct the new source) could be ruled out. While the capital costs of controls represent only 5 percent of total capital cost for a new model facility, the capital costs of control for replacing or adding an individual tank are significant and may be 50 percent of the total capital cost required to install a new individual tank. Also, the bulk plant industry is declining due to closure and consolidation of firms, and it is possible that the impact of further regulation would be to accelerate closures. Therefore, it was determined that a potential adverse economic impact exists.

Although an Agency study indicates that the cost effectiveness of controls is reasonable for typical facilities ($520/Mg), the economic impact may not be reasonable. The Agency was unable to quantify the profitability of bulk plant firms, and no data are available to prove that these firms have access to sufficient capital to install controls. Even firms that are part of integrated operations may not be able to divert capital from more profitable operations to bulk plant operations. Therefore, the Agency was unable to ascertain how many of the plants that would add or replace tanks would suffer an adverse economic impact due to the inability to finance the capital costs of controls. Furthermore, bulk plants are an identifiable class of vessels, and an exemption for this class would not affect the objectivity and enforceability of the standards. For these reasons, the Agency has decided to exempt bulk gasoline plants from the standards.

This change in the regulation from proposal only affects those plants in attainment areas. Plants located in nonattainment areas would have been exempted in any case because the control technology required by the SIP's in these areas (vapor balance systems) is incompatible with BDT. The bulk plant industry is also part of the gasoline marketing source category, and the decision as to whether to regulate emissions from these vessels at bulk plants is being made in a regulatory decision package for that category.

One commenter also requested that EPA grant an exemption from the standards for vessels used to store nonindustrial, distilled beverage alcohol. The commenter requested the exemption for the following reasons: (1) Producers of distilled spirits are insignificant sources of VOC emissions, (2) the suggested control technology would be either extremely damaging to the product as a food item or would be proscribed by existing Federal regulations, and (3) the costs and other problems that would result from implementation of the proposed standards would violate Executive Order 12291.

The Agency concurs with the commenter that the proposed control technologies required by these standards could contaminate beverage alcohol, resulting in a product with little or no market value. Also, because beverage alcohol was exempted from the priority list as part of the synthetic organic chemical manufacturing industry source category and because it is not a petroleum liquid, storage vessels containing beverage alcohol are exempt from the final standards. However, any storage vessels that are used to store nonbeverage, fermented products are subject to the standards if they are found to be affected facilities.

Some commenters requested that the provision of Subparts K and Ka that exempts underground vessels when the volume of liquid added to and taken from the tank in a year does not exceed twice the volume of the vessel be continued in Subpart Kb.

Based on the following reasons, the Administrator has decided not to continue the exemption. It is impracticable to control emissions from underground vessels with internal floating roofs. Emissions from these tanks can be controlled with vapor recovery or disposal systems designed and operated in compliance with these standards. While the cost effectiveness of vapor recovery or disposal systems in these isolated instances may be high, cost effectiveness is not a measure of economic impact. Rather, it is a measure of the cost efficiency of subclasses of vessels. The overall cost of the

standards to the industry is a net credit. Additionally, aboveground IFR's or EFR's equipped with the controls required by the standards could be constructed in lieu of underground storage vessels. Therefore, the Administration has decided not to include this exemption in the promulgated standards. It should be noted that the exemption does continue for vessels constructed after the date of proposal for Subpart K but prior to proposal for Subpart Kb.

One commenter contended that the BID does not support the inclusion of underground storage vessels, particularly those smaller than 100 m^3 (26,000 gal) in capacity. The commenter's primary concern was that some manufacturing plants may not have adequate space to install aboveground tanks in place of underground tanks. The commenter also noted that emissions from these vessels are excessively costly to control. According to the commenter, installations storing VOL for use in manufacturing operations may need one or two horizontal, underground tanks as large as 95 m^3 (25,000 gal) to store material received from railroad tank cars that have capacities up to 75 m^3 (20,000 gal). The commenter recommended that an exemption be included in the proposed standard for underground storage vessels with capacities less than 100 m^3 (26,000 gal).

Adequate spacing of tanks is necessary to reduce the possibility of the spread of fire from the tank initially involved to exposed structures or adjacent tanks. For example, a 75–m^3 (20,000-gal) tank would have to be placed at least 7.5 to 15 m (25 to 50 ft) away from buildings depending on the flammability of the liquid being stored. The minimum tank-to-tank spacing is one-half the diameter of the largest tank, which is 4.3 m (14 ft) in the case of adjacent 75-m^3 (20,000-gal) tanks. In contrast, underground tanks may be located as close as 1.5 m (5 ft) to building foundations and 0.6 m (2 ft) to other tanks and pipelines.

Aboveground tanks are a proven and safe method of storage, and there appear to be no technical reasons why aboveground tanks could not be installed in place of underground tanks when space permits. Furthermore, it is expected that space would not be a problem at new plants because they can be designed to allow sufficient space for aboveground tanks. However, EPA cannot predict which existing facilities may have spacing problems in installing new aboveground tanks. In cases where space is a problem, the owner or operator may install underground tanks equipped with the control devices allowed by § 60.112b(a)(3).

The cost effectiveness of controlling emissions from a 113-m^3 (30,000-gal) capacity underground tank is about $2,100/Mg. This amount assumes the tank undergoes 10 turnovers per year, which is typical for the commenter's industry. While $2,100/Mg is higher than the cost effectiveness of BDT control (i.e., floating roof) in comparable tanks ($310/Mg), the overall cost of the standards to the industry is a net credit. Therefore, the promulgated standards were not revised to include a blanket exemption for underground storage vessels because adequate means of complying with the standards (aboveground vessels or underground vessels equipped with add-on controls) exist.

One commenter noted that horizontal tanks are used widely in the synthetic organic chemical manufacturing industry (SOCMI). The commenter said that, because floating roofs cannot be used in these tanks, there is a problem in applying the proposed standards to them.

The standards provide three fundamentally different methods of compliance:

1. Tanks equipped with an external floating roof and with liquid-mounted or mechanical shoe primary seals and a rim-mounted secondary seal;

2. Tanks equipped with an internal floating roof and with liquid-mounted or mechanical shoe primary seals or vapor-mounted primary seals and secondary seals and gasketed fittings; or

3. A 95 percent effective vapor control system. Horizontal tanks are typically small (volumes rarely exceed 113 m^3 [30,000 gal]); and because EFR's are rarely smaller than 492 m^3 (130,000 gal), these horizontal tanks could not be constructed as new EFR's. However, the other options allowed by the standard are suitable for vesels in the size range of horizontal tanks. In subsequent discussion, the commenter agreed that vertical tanks equipped with internal floating roofs could be used in place of horizontal tanks although in some instances such as separation processes horizontal tanks were advantageous.

Additional information was obtained from the State of Texas on the issue. Texas requires equipment similar to BDT (internal floating roofs) for all new storage vessels with capacities of 95 m^3 (25,000 gal) or greater storing liquids with vapor pressures of 3.5 kPa (0.51 psia) or greater and, thus, currently requires controls on vessels of concern to the commenter. Texas Air Control Board (TACB) personnel have stated that, in their permitting experience, there are very few circumstances in which the tanks must be horizontal. If a horizontal tank is used, the TACB generally requires add-on control systems (carbon adsorption or thermal oxidation).

Previous studies of storage in the chemical industry indicate that add-on control systems are cost effective (less than $1,000/Mg) for tanks with volumes less than 151 m^3 (40,000 gal) storing liquids with high vapor pressures. For example, the average cost effectiveness of a 95 percent efficient condenser for chloroform storage at chloroform production facilities is $630/Mg. This issue was further analyzed by examining the cost effectiveness of controlling a 113 m^3 (30,000 gal) horizontal tank as a function of turnover rate and filling rate. While turnover rates of 170 times per year are typical for vessels in this size range in the chemical industry, cases were analyzed assuming 5 and 10 turnovers per year. Cost-effectiveness values were determine for 4 chemicals (n-pentane, cyclopentane, isoprene, ethyl ether) stored at 21° (70°F). The average cost effectiveness of these cases ranged from $650/Mg to $1,540/Mg. This range is judged to be reasonable. The standards are achievable and, in many cases, are cost effective even if atypical turnover rates are assumed and if add-on controls are adopted. Furthermore, only 0.22 percent of vessels in the 75- tc 151-m^3 (20,000- to 40,000-gal) size range are used to store liquid with vapor pressures between 27.6 and 58.7 kPa (4 and 8.5 psia) in the chemical industry, and only 8 percent of total storage capacity is dedicated to storage of liquids with vapor pressures between 20.7 and 103.4 kPa (3 and 15 psia). Based on this information, it is reasonable to assume that only a very small proportion of potential new sources of small fixed roof tanks in the chemical industry would be affected by the standards. Therefore, no exemption for these vessels has been incorporated into the final rule.

Several commenters requested an exemption to the recordkeeping requirements for tanks used to store a mixture of different products ("slop oil") and for tanks used to retain wastewater after the organic liquids have been removed in an oil-water separator. The commenters said that the constantly changing nature of the products and the associated vapor pressure in the slop oil vessels would necessitate physical testing to determine vapor pressure as required in the proposed standards. The

wastewater vessels contain liquids with low vapor pressures such that operational monitoring is inappropriate.

The purpose of the vapor pressure determination is to distinguish between the three possible classes of VOL's that are of concern:

1. Those liquids with vapor pressures greater than or equal to a control cutoff (27.6 kPa [4 psia] for vessels with capacities of 75 m^3 [20,000 gal] or greater and 5.2 kPa [0.75 psia] for vessels with capacities of 151 m^3 [40,000 gal] or greater);

2. Those liquids that are exempt from all vapor pressure recordkeeping provisions of the standards (less than 15 kPa [2.2 psia] for vessels with capacities between 75 and 151 m^3 [20,000 and 40,000 gal] and less than 3.5 kPa [0.51 psia] for vessels with capacities of 151 m^3 [40,000 gal] or greater); and

3. Those liquids for which monitoring, but not emission control, is required (greater than or equal to 15 kPa [2.2 psia] and less than 27.6 kPa [4 psia] for vessels with capacities ranging from 75 to 151 m^3 [20,000 to 40,000 gal] and greater than or equal to 3.5 kPa [0.51 psia] and less than 5.2 kPa [0.75 psia] for vessels with capacities of 151 m^3 [40,000 gal] or greater).

For most chemical and petroleum products, the class to which a given liquid belongs will be obvious. For instance, the vapor pressure of No. 2 fuel oil will not exceed 5.2 kPa (0.75 psia) at normal storage temperatures, and, therefore, vessels storing this liquid would be exempt from all except the monitoring provisions of the standards.

Waste tanks with constantly changing mixtures pose a different issue. While a range of possible vapor pressures will be known, constant minor fluctuations in composition will prevent the determination of the actual vapor pressure without extensive (perhaps daily) testing. However, these fluctuations generally are not so large that under normal operating conditions large daily changes in vapor pressure would be expected. Extensive testing of these liquids would be unduly burdensome to industry without providing a corresponding benefit. Therefore, EPA sought an alternative that would preserve the intent of the requirement without being unreasonably burdensome.

Prior to construction of the vessel, the range of likely liquid compositions will be known, as will the maximum monthly average storage temperature. Given these, it is possible to estimate the vapor pressure of the mixture by Raoult's law:

$P_t = \Sigma P_n X_n$.

where

P_t = the total vapor pressure.
P_n = the vapor pressure component.
X_n = the mole fraction of a component.

As with all other liquids, if the anticipated liquid composition with the highest vapor pressure is below the monitoring cutoffs, the vessel would be exempt from the vapor pressure monitoring requirements of the standards.

For these types of liquids, the provisions for monitoring have been changed from those proposed. If the anticipated liquid composition is above the cutoff for monitoring but below the cutoff for controls, the standards require a physical test of the vapor pressure initially and at least once every 6 months thereafter. This testing is not costly (less than $100) and would serve the intent of the proposed standards without being burdensome. Records of the results will be kept by the owner or operator, but reports will be required only in the event the vapor pressure of the stored liquid exceeds the threshold for controls.

Emission Control Technology

One commenter stated that industry experience with secondary seals on EFR's is limited and that there is uncertainty regarding the effective life of the seals. The commenter also requested that EPA acknowledge a potential safety hazard from the formation of a vapor space between the primary and secondary seal.

There may be some uncertainty about the lifetime of secondary seals; the actual lifetime may be longer or shorter than the 10 years estimated at proposal. Comments received on the draft Control of Volatile Organic Compound Emissions From Volatile Organic Liquid Storage in Floating and Fixed Roof Tanks (CTG), August 1983, suggested that vapor-mounted primary seals on an internal floating roof would have a lifetime of 10 years or more in the more severe chemical services. Because the construction of the seal systems is similar to that of secondary seals used on EFR's, it is reasonable to assume a 10-year life on secondary seals for EFR's as an average.

The Agency has determined that adequate technology exists and is commonly employed to operate EFR's with double seals in a safe manner. Although specific data are not available for EFR's equipped with double-seal systems, the fire and explosion hazard is greatly reduced because the floating roof eliminates vapor space. The reduced hazard is substantiated by a study conducted by Factory Mutual Research of fire loss experience of storage vessels from 1962 to 1974. Fixed roof tanks were involved in 53 percent of all losses while floating roof tanks were involved in only 34 percent. Significantly, 47 percent of fixed roof tanks were totally destroyed compared to 12 percent of the floating roof tanks. Unlike fires in fixed roof tanks, most fires in floating roof tanks were extinguished by portable foam or water hose streams before serious damage occurred. Therefore, the Administrator has concluded that there are no safety hazards associated with floating roof tanks beyond those normally experienced by industry.

Some commenters noted that vented IFR's may not be the best choice of storage vessel in cases where the stored liquid must be protected from moisture or oxygen. They cited chemical products such as chlorinated solvents that may be contaminated by exposure to moist ambient air. One commenter noted that vented IFR's would greatly increase the cost of inert gas pads.

These comments are based on the premise that the IFR required in § 60.112(b)(a)(1) must be vented. The Agency agrees that ventilating tanks storing liquids that must be protected from contact with ambient air is not wise. Neither the proposed nor the promulgated standards require the IFR to be vented. The IFR may be ventilated or nonventilated, padded or unpadded, according to the preference of the owner or operator, without affecting the compliance status of the tank. Therefore, the requirement for an internal floating roof will impose no additional contamination problems, safety problems, or gas padding costs over normal industry practice. No changes to the standards were made as a result of these comments.

Some commenters stated that use of the floating roof itself is incompatible with storage of highly corrosive liquids. According to the commenters, to prevent corrosion damage, the vessel either may be lined with plastics, fluoropolymers, or synthetic materials, or it may be constructed with fiberglass reinforced plastic. These commenters state that such materials are unable to withstand the abrasion that is inherent in the operation of floating roofs.

Regarding the abrasion of the tank liner, internal floating roof seals are typically made of soft materials and are softer than common liners. The seals do not exert much compressive force against the tank sidewall. The anticipated point of wear would be the seal and not the tank liner. Internal floating roofs have been installed in lined tanks and have operated properly without excessive wear to the liner.

Therefore, no exemption for lined tanks has been incorporated into the final standards.

Fiberglass reinforced plastic (FRP) tanks are used by some tank operators to store corrosive liquids (chlorinated solvents, acids, and bases). These tanks generally are lined with a corrosion barrier composed of a thin layer of resin. Floating roof are not used in these tanks because a leak or structural damage could result if the roofs seals damage the resin layer. However, stainless steel tanks equipped with internal floating roofs may be substituted for FRP tanks, or emissions from FRP tanks may be controlled by use of a closed vent system and 95 percent effective control device. Therefore, because adequate control alternatives are available to owners or operators of FRP tanks, no revisions have been made to the standards as a result of this comment.

Other commenters questioned whether ventilation in IFR's is adequate to prevent an explosion hazard. They said that the proposed standards should recognize that the use of IFR's could promote the formation of explosive vapor mixtures above the floating roof. They also noted that, by design, the product stored in an IFR is isolated from any roof-mounted deluge system, thus reducing the probability of early control of any fire that occurs.

The Agency has determined that the final standards do not pose a safety hazard. A representative of the Texas Chemical Council stated that his company's safety personnel had reviewed the standards and did not believe that the required controls would pose a hazard. Data from vendors indicate that the lower explosive limit was never reached in tests on a noncontact internal floating roof in vented tanks storing a wide variety of products. It appears that there are no additional safety hazards associated with the IFR beyond those hazards normally accepted by the industry.

Regarding isolation from any roof-mounted deluge system, vendors of internal floating roofs as well as Factory Mutual Research Standards have stated that foam distribution systems have been used successfully against fires in IFR's. Foaming the deck closes off the oxygen supply; any vapor space under the deck will quickly be deficient in the oxygen necessary to support a fire.

Some commenters stated that the flare exit velocity limitations are unduly restrictive and suggested that they be reviewed in light of the latest information from the Chemical Manufacturers Association and EPA. They said that the velocity specifications are identical to those proposed in the SOCMI equipment leak NSPS and suggested that both the SOCMI and the proposed VOL standards be revised to encompass a consistent set of limitations based on a recently completed study showing 98 percent or better destruction efficiencies at velocities greater than the existing velocity limitation. One commenter suggested a public comment period on flare operation limitations.

The flare exit velocity limitations have been reviewed by EPA in the time since the standards were proposed. New data obtained by an EPA test program showed that VOC destruction efficiencies of 98 percent or better are achievable using higher exit velocities when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf). Accordingly, an addition to the General Provisions (§ 60.18) was promulgated (51 FR 2699, January 21, 1986) to reflect this information, and the VOL standards were revised as well. The specifications limit flare exit velocity of steam-assisted and nonassisted flares to 18.3 m/s (60 ft/s) unless the net heating value of the gas being combused is greater than 37.3 MJ/scm (1,000 Btu/scf). In this latter case, exit velocities may be between 18.3 m/s and 122 m/s (60 ft/s and 400 ft/s). The specifications also permit the owners to operate the flare at a prorated maximum exit velocity (based on the net heating value of the gas being combusted) so long as it is less than 122 m/s (400 ft/s) but greater than 18.3 m/s (60 ft/s).

Some commenters found the required use of flexible fabric sleeve seals on column penetrations to be restrictive and recommended that EPA also allow the use of gasketed sliding covers. They noted that flexible fabric sleeve seals are a fitting design unique to a single manufacturer and are not generally available. They also noted an insignificant difference in overall emission reduction (0.1 to 0.2 percent) when flexible fabric sleeve seals are used in place of gasketed sliding covers. They stated that the use of "built-up" columns, which are currently in wide-spread use, is disallowed under the proposed standards because sleeve seals can only be used with pipe columns. One commenter discussed the potential for damage and maintenance repair problems with use of sleeve seals, which could result in lengthy downtime.

Flexible fabric sleeve seals are currently available only on contact decks. It is not the intent of the Agency to prohibit the use of noncontact decks with this fitting requirement. While the annualized cost of redesigning a noncontact deck to allow the adoption of flexible fabric sleeve seals is not known, the Agency has determined that it is highly unlikely that noncontact decks could be redesigned and flexible fabric sleeve seals installed cost effectively. Alternatively, gasketed sliding covers are widely available and may be employed on both contact and noncontact decks with a slight difference in overall emission reduction as noted by the commenter. Therefore, the Agency has decided to revise the proposed regulations to allow the use of either flexible fabric sleeve seals or gasketed sliding covers.

Recordkeeping, Reporting, and Inspection requirements

Commenters said that an annual visual inspection of IFR seals precludes the use of nonvented IFR's because of the excessive time, materials, and manpower required to inspect the vessels. They also said that the inspection could pose a safety hazard. One commenter suggested that IFR's with primary and secondary seals be inspected internally at 5-year intervals. If EPA were to approve a 5-year inspection interval, the commenter further proposed that it be considered equivalent to an annual inspection of a single-seal system. The commenter calculated that overall emission rates due to seal failure are equivalent under the two options. Other commenters suggested that VOC emissions be monitored annually from a small fitting on the roof. They said that if monitoring indicates a significant increase in emissions, an internal inspection would be warranted to find and correct the problem. It was suggested that this option either replace or be considered equivalent to the annual visual inspection.

After evaluating this issue, the Agency has determined that it may not be possible to inspect all IFR's without emptying and degassing the vessel. The Agency evaluated the commenters' proposed revisions and has decided to revise the standards. If the operator equips the vessel with a primary and a secondary seal and conducts an internal inspection every 5 years, the controls are considered equivalent to a single-seal system and annual visual inspection. Under the double-seal system option, the addition of a secondary seal will reduce emissions beyond the emission reduction achieved by a single-seal system, thus offsetting the risk of increased emission due to seal failure. In any case, seal failure rates are generally quite low, and a major failure (such as a deck sinking) would be evident to the operator even in

the absence of an annual inspection because of a loss of material.

A worse-case analysis of the possible impact this suggestion would have on emissions was performed. Even if 10 percent of the tanks equipped with primary and secondary seals experienced total failure of one seal, average emissions would be 4 percent lower than if all tanks had been equipped with a primary seal only.

The alternative of VOC monitoring suggested by the commenters has not been incorporated into the final standards. There are no data on which to base a selection of a hydrocarbon concentration that would indicate a problem with the control equipment. The hydrocarbon concentration measured at the roof fitting would be heavily dependent upon recent tank operations (e.g., filling, emptying, or static level) and liquid level. The Agency is not aware of any method by which an annual concentration measurement could be used to establish the condition of the control equipment.

Several commenters said that the 30-day allowance for repairing or emptying storage vessels found to be out of compliance is unreasonble. Commenters said that the provision would necessitate the installation of two small tanks rather than a single large tank to provide the flexibility to transfer material from a vessel in need of repair.

Another commenter noted that the provision would be a problem in the event a facility found that several vessels were simultaneously out of compliance. Commenters suggested that a 45-day to 120-day allowance would give the operator sufficient time to order, receive, and install new equipment without having to request an extension for repairing or emptying the vessel.

Discussion with storage vessel manufacturers indicated that a 30-day allowance for repairing or exempting storage vessels in conjunction with the option of requesting a 30-day extension is reasonable from the supplier's viewpoint. However, in the event that special materials not normally kept in stock (such as Teflon seals) were required, this time would probably be insufficient. The Agency has decided to revise the proposed standards to provide a 45-day allowance to accommodate delays in repairing or emptying the vessel. A 30-day extension may still be requested if repairs are likely to exceed the initial allowance.

VIII. Administrative

The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a dynamic file because material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and affected industries to identify and locate documents so that they can intelligently and effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated standards and EPA responses to significant comments, the contents of the docket, except for interagency review materials, will serve as the record in case of judicial review [section 307(d)(7)(A)].

The effective date of this regulation is April 8, 1987. Section 111 of the Clean Air Act provides that standards of performance or revisions thereof become effective upon promulgation and apply to affected facilities, construction or modification of which was commenced after the date of proposal (July 23, 1984).

As prescribed by section 111, the promulgation of these standards is based on the Administrator's determination that SOCMI and VOL storage vessels and handling equipment contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. In accordance with section 117 of the Act, publication of these promulgated standards was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies.

This regulation will be reviewed 4 years from the date of promulgation as required by the Clean Air Act. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology, and reporting requirements.

Section 317 of the Clean Air Act requires the Administrator to prepare an economic impact assessment for any new source standard of performance promulgated under section 111(b) of the Act. An economic impact assessment was prepared for this regulation and for other regulatory alternatives. All aspects of the assessment were considered in the formulation of the standards to ensure that cost was carefully considered in determining BDT. The economic impact assessment is included in the BID for the proposed standards.

Information collection requirements associated with this regulation (those included in 40 CFR Part 60, Subpart A and Subpart Kb) have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, and have been assigned OMB control number 2060-0074.

Under Executive Order 12291, EPA is required to judge whether a regulation is a "major rule" and therefore subject to the requirements of a regulatory impact analysis (RIA). The Agency has determined that this regulation would result in none of the adverse economic effects set forth in section 1 of the Order as grounds for finding a regulation to be a "major rule." The regulation results in a net annual credit to the industry, and no price increases are expected. The Agency has concluded, therefore, that this regulation is not a "major rule" under Executive Order 12291. The regulation was submitted to OMB for review as required by Executive Order 12291.

The Regulatory Flexibility Act of 1980 requires the identification of potentially adverse impacts of Federal regulations upon small business entities. The Act specifically requires the completion of a Regulatory Flexibility Analysis in those instances where small business impacts are possible. Because these standards impose no adverse economic impacts, a Regulatory Flexibility Analysis has not been conducted.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 60

Air pollution control, Intergovernmental relations, Reporting and recordkeeping requirements, Incorporation by reference, Volatile organic liquid storage vessels.

Dated: March 30, 1987.

Lee M. Thomas,

Administrator.

PART 60—[AMENDED]

For the reasons set out in the preamble, Title 40, Chapter I of the Code of Federal Regulations is amended as follows.

1. The authority citation for Part 60 continues to read as follows:

Authority: Secs. 101, 111, 114, 116, 301, Clean Air Act as amended (42 U.S.C. 7401, 7411, 7414, 7416, 7601).

2. Section 60.16 of Subpart A is amended by revising the first entry in the list to read as follows:

§ 60.16 Priority list.

* * * * *

1. Synthetic Organic Chemical Manufacturing Industry (SOCMI) and

Volatile Organic Liquid Storage Vessels and Handling Equipment
(a) SOCMI unit processes
(b) Volatile organic liquid (VOL) storage vessels and handling equipment
(c) SOCMI fugitive sources
(d) SOCMI secondary sources

* * * * *

3. Section 60.17 of Subpart A is amended by revising paragraph (a)(13), paragraph (a)(37), paragraph (c) introductory text, and paragraph (c)(1) as follows:

§ 60.17 Incorporation by reference.

(a) * * *

(13) ASTM D323–82, Test Method for Vapor Pressure of Petroleum Products (Reid Method), IBR approved April 8, 1987 for §§ 60.111(1), 60.111a(g), 60.111b(g), and 60.116b(f)(2)(ii).

* * * * *

(37) ASTM D2879–83, Test Method for Vapor Pressure—Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope, IBR approved April 8, 1987 for §§ 60.485(e), 60.111b(f)(3), 60.116b(e)(3)(ii), and 60.116b(f)(2)(i).

* * * * *

(c) The following material is available for purchase from the American Petroleum Institute, 1220 L Street NW., Washington, DC 20005.

(1) API Publication 2517, Evaporation Loss from External Floating Roof Tanks, Second Edition, February 1980, IBR approved January 27, 1983, for §§ 60.111(i), 60.111a(f), 60.111a(f)(1) and 60.116b(e)(2)(i).

* * * * *

4. The heading for Subpart K is revised to read as follows:

Subpart K—Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978

* * * * *

5. In § 60.111 of Subpart K, paragraph (l) is revised to read as follows:

§ 60.111 Definitions.

* * * * *

(l) "Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids, except liquified petroleum gases, as determined by ASTM D323–82 (incorporated by reference—see § 60.17).

* * * * *

6. The heading for Subpart Ka is revised to read as follows:

Subpart Ka—Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984

* * * * *

7. In § 60.111a of Subpart Ka, paragraph (g) is revised to read as follows:

§ 60.111a Definitions.

* * * * *

(g) "Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and nonviscous petroleum liquids, except liquified petroleum gases, as determined by ASTM D323–82 (incorporated by reference—see § 60.17).

* * * * *

8. In § 60.113a of Subpart Ka, the introductory text of (a)(1)(i) is revised and (a)(1)(i) (D) and (E) are added to read as follows:

§ 60.113a Testing and procedures.

(a) * * *
(1) * * *
(i) Determine the gap areas and maximum gap widths between the primary seal and the tank wall and between the secondary seal and the tank wall according to the following frequency:

* * * * *

(D) Keep records of each gap measurement at the plant for a period of at least 2 years following the date of measurement. Each record shall identify the vessel on which the measurement was performed and shall contain the date of the seal gap measurement, the raw data obtained in the measurement process required by paragraph (a)(1)(ii) of this section and the calculation required by paragraph (a)(1)(iii) of this section.

(E) If either the seal gap calculated in accord with paragraph (a)(1)(iii) of this section or the measured maximum seal gap exceeds the limitations specified by § 60.112a of this subpart, a report shall be furnished to the Administrator within 60 days of the date of measurements. The report shall identify the vessel and list each reason why the vessel did not meet the specifications of § 60.112a. The report shall also describe the actions necessary to bring the storage vessel into compliance with the specifications of § 60.112a.

9. Subpart Ka § 60.114a is revised as follows:

§ 60.114a Alternative means of emission limitation.

(a) If, in the Administrator's judgment, an alternative means of emission limitation will achieve a reduction in emissions at least equivalent to the reduction in emissions achieved by any requirement in § 60.112a, the Administrator will publish in the **Federal Register** a notice permitting the use of the alternative means for purposes of compliance with that requirement.

(b) Any notice under paragraph (a) of this section will be published only after notice and an opportunity for a hearing.

(c) Any person seeking permission under this section shall submit to the Administrator a written application including:

(1) An actual emissions test that uses a full-sized or scale-model storage vessel that accurately collects and measures all VOC emissions from a given control device and that accurately simulates wind and accounts for other emission variables such as temperature and barometric pressure.

(2) An engineering evaluation that the Administrator determines is an accurate method of determining equivalence.

(d) The Administrator may condition the permission on requirements that may be necessary to ensure operation and maintenance to achieve the same emissions reduction as specified in § 60.112a.

(e) The primary vapor-mounted seal in the "Volume-Maximizing Seal" manufactured by R.F.I. Services Corporation is approved as equivalent to the vapor-mounted seal required by § 60.112a(a)(1)(i) and must meet the gap criteria specified in § 60.112a(a)(1)(i)(B). There shall be no gaps between the tank wall and any secondary seal used in conjunction with the primary seal in the "Volume-Maximizing Seal".

10. Part 60 is amended by adding Subpart Kb, consisting of §§ 60.110b thru 60.117b, to read as follows:

Subpart Kb—Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984

Sec.
60.110b Applicability and designation of affected facility.
60.111b Definitions.
60.112b Standard for volatile organic compounds (VOC).
60.113b Testing and procedures.
60.114b Alternative means of emission limitation.
60.115b Recordkeeping and reporting requirements.
60.116b Monitoring of operations.
60.117b Delegation of authority.

Subpart Kb—Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984

§ 60.110b Applicability and designation of affected facility.

(a) Except as provided in paragraphs (b), (c), and (d) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 40 cubic meters (m^3) that is used to store volatile organic liquids (VOL's) for which construction, reconstruction, or modification is commenced after July 23, 1984.

(b) Except as specified in paragraphs (a) and (b) of § 60.116b, storage vessels with design capacity less than 75 m^3 are exempt from the General Provisions (Part 60, Subpart A) and from the provisions of this subpart.

(c) Except as specified in paragraphs (b) and (c) of § 60.116b, vessels either with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kPa or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from the General Provisions (Part 60, Subpart A) and from the provisions of this subpart.

(d) This subpart does not apply to the following:

(1) Vessels at coke oven by-product plants.

(2) Pressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere.

(3) Vessels permanently attached to mobile vehicles such as trucks, railcars, barges, or ships.

(4) Vessels with a design capacity less than or equal to 1,589.874 m^3 used for petroleum or condensate stored, processed, or treated prior to custody transfer.

(5) Vessels located at bulk gasoline plants.

(6) Storage vessels located at gasoline service stations.

(7) Vessels used to store beverage alcohol.

§ 60.111b Definitions.

Terms used in this subpart are defined in the Act, in Subpart A of this part, or in this subpart as follows:

(a) "Bulk gasoline plant" means any gasoline distribution facility that has a gasoline throughput less than or equal to 75,700 liters per day. Gasoline throughput shall be the maximum calculated design throughput as may be limited by compliance with an enforceable condition under Federal requirement or Federal, State or local law, and discoverable by the Administrator and any other person.

(b) "Condensate" means hydrocarbon liquid separated from natural gas that condenses due to changes in the temperature or pressure, or both, and remains liquid at standard conditions.

(c) "Custody transfer" means the transfer of produced petroleum and/or condensate, after processing and/or treatment in the producing operations, from storage vessels or automatic transfer facilities to pipelines or any other forms of transportation.

(d) "Fill" means the introduction of VOL into a storage vessel but not necessarily to complete capacity.

(e) "Gasoline service station" means any site where gasoline is dispensed to motor vehicle fuel tanks from stationary storage tanks.

(f) "Maximum true vapor pressure" means the equilibrium partial pressure exerted by the stored liquid at the temperature equal to the highest calendar-month average of the liquid storage temperature for liquids stored above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for liquids stored at the ambient temperature, as determined:

(1) In accordance with methods described in American Petroleum institute Bulletin 2517, Evaporation Loss From External Floating Roof Tanks, (incorporated by reference—see § 60.17); or

(2) As obtained from standard reference texts; or

(3) As determined by ASTM Method D2879–83 (incorporated by reference—see § 60.17);

(4) Any other method approved by the Administrator.

(g) "Reid vapor pressure" means the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids except liquified petroleum gases, as determined by ASTM D323–82 (incorporated by reference—see § 60.17).

(h) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

(i) "Petroleum liquids" means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery.

(j) "Storage vessel" means each tank, reservoir, or container used for the storage of volatile organic liquids but does not include:

(1) Frames, housing, auxiliary supports, or other components that are not directly involved in the containment of liquids or vapors; or

(2) Subsurface caverns or porous rock reservoirs.

(k) "Volatile organic liquid" (VOL) means any organic liquid which can emit volatile organic compounds into the atmosphere except those VOL's that emit only those compounds which the Administrator has determined do not contribute appreciably to the formation of ozone. These compounds are identified in EPA statements on ozone abatement policy for SIP revisions (42 FR 35314, 44 FR 32042, 45 FR 32424, and 45 FR 48941).

(l) "Waste" means any liquid resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, or biologically treated prior to being discarded or recycled.

§ 60.112b Standard for volatile organic compounds (VOC).

(a) The owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m^3 containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or with a design capacity greater than or equal to 75 m^3 but less than 151 m^3 containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa but less than 76.6 kPa, shall equip each storage vessel with one of the following:

(1) A fixed roof in combination with an internal floating roof meeting the following specifications:

(i) The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied or subsequently emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.

(ii) Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:

(A) A foam-or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted

seal means a foam-or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank.

(B) Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.

(C) A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.

(iii) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.

(iv) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.

(v) Automatic bleeder vents shall be equipped with a gasket and are to 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.

(vi) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.

(vii) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.

(viii) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.

(ix) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

(2) An external floating roof. An external floating roof means a pontoon-type or double-deck type cover that rests on the liquid surface in a vessel with no fixed roof. Each external floating roof must meet the following specifications:

(i) Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge. The closure device is to consist of two seals, one above the other. The lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.

(A) The primary seal shall be either a mechanical shoe seal or a liquid-mounted seal. Except as provided in § 60.113b(b)(4), the seal shall completely cover the annular space between the edge of the floating roof and tank wall.

(B) The secondary seal shall completely cover the annular space between the external floating roof and the wall of the storage vessel in a continuous fashion except as allowed in § 60.113b(b)(4).

(ii) Except for automatic bleeder vents and rim space vents, each opening in a noncontact external floating roof shall provide a projection below the liquid surface. Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof is to be equipped with a gasketed cover, seal, or lid that is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. Automatic bleeder vents are to 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. Rim vents are to be set to open when the roof is being floated off the roof legs supports or at the manufacturer's recommended setting. Automatic bleeder vents and rim space vents are to be gasketed. Each emergency roof drain is to be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.

(iii) The roof shall be floating on the liquid at all times (i.e., off the roof leg supports) except during initial fill until the roof is lifted off leg supports and when the tank is completely emptied and subsequently refilled. The process of filling, emptying, or refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as possible.

(3) A closed vent system and control device meeting the following specifications:

(i) The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined in Part 60, Subpart VV, § 60.485(b).

(ii) The control device shall be designed and operated to reduce inlet VOC emissions by 95 percent or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements (§ 60.18) of the General Provisions.

(4) A system equivalent to those described in paragraphs (a)(1), (a)(2), or (a)(3) of this section as provided in § 60.114b of this subpart.

(b) The owner or operator of each storage vessel with a design capacity greater than or equal to 75 m^3 which contains a VOL that, as stored, has a maximum true vapor pressure greater than or equal to 76.6 kPa shall equip each storage vessel with one of the following:

(1) A closed vent system and control device as specified in § 60.112b(a)(3).

(2) A system equivalent to that described in paragraph (b)(1) as provided in § 60.114b of this subpart.

§ 60.113b Testing and procedures.

The owner or operator of each storage vessel as specified in § 60.112b(a) shall meet the requirements of paragraph (a), (b), or (c) of this section. The applicable paragraph for a particular storage vessel depends on the control equipment installed to meet the requirements of § 60.112b.

(a) After installing the control equipment required to meet § 60.112b(a)(1) (permanently affixed roof and internal floating roof), each owner or operator shall:

(1) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.

(2) For vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least one every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel

from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in § 60.115(a)(b)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

(3) For vessels equipped with a double-seal system as specified in § 60.112b(a)(1)(ii)(B):

(i) Visually inspect the vessel as specified in paragraph (a)(4) of this section at least every 5 years; or

(ii) Visually inspect the vessel as specified in paragraph (a)(2) of this section.

(4) Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes (if any), and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in paragraph (a)(2) of this section and at intervals no greater than 5 years in the case of vessels specified in paragraph (a)(3) of this section.

(5) Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraphs (a)(1) and (a)(4) of this section to afford the Administrator the opportunity to have an observer present. If the inspection required by paragraph (a)(4) of this section is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.

(b) After installing the control equipment required to meet § 60.112b(a)(2) (external floating roof), the owner or operator shall:

(1) Determine the gap areas and maximum gap widths, between the primary seal and the wall of the storage vessel and between the secondary seal and the wall of the storage vessel according to the following frequency.

(i) Measurements of gaps between the tank wall and the primary seal (seal gaps) shall be performed during the hydrostatic testing of the vessel or within 60 days of the initial fill with VOL and at least once every 5 years thereafter.

(ii) Measurements of gaps between the tank wall and the secondary seal shall be performed within 60 days of the initial fill with VOL and at least once per year thereafter.

(iii) If any source ceases to store VOL for a period of 1 year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill for the purposes of paragraphs (b)(1)(i) and (b)(1)(ii) of this section.

(2) Determine gap widths and areas in the primary and secondary seals individually by the following procedures:

(i) Measure seal gaps, if any, at one or more floating roof levels when the roof is floating off the roof leg supports.

(ii) Measure seal gaps around the entire circumference of the tank in each place where a 0.32-cm diameter uniform probe passes freely (without forcing or binding against seal) between the seal and the wall of the storage vessel and measure the circumferential distance of each such location.

(iii) The total surface area of each gap described in paragraph (b)(2)(ii) of this section shall be determined by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance.

(3) Add the gap surface area of each gap location for the primary seal and the secondary seal individually and divide the sum for each seal by the nominal diameter of the tank and compare each ratio to the respective standards in paragraphs (b)(4) of this section.

(4) Make necessary repairs or empty the storage vessel within 45 days of identification in any inspection for seals not meeting the requirements listed in (b)(4)(i) and (ii) of this section:

(i) The accumulated area of gaps between the tank wall and the mechanical shoe or liquid-mounted primary seal shall not exceed 212 Cm^2 per meter of tank diameter, and the width of any portion of any gap shall not exceed 3.81 cm.

(A) One end of the mechanical shoe is to extend into the stored liquid, and the other end is to extend a minimum vertical distance of 61 cm above the stored liquid surface.

(B) There are to be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope.

(ii) The secondary seal is to meet the following requirements:

(A) The secondary seal is to be installed above the primary seal so that it completely covers the space between the roof edge and the tank wall except as provided in paragraph (b)(2)(iii) of this section.

(B) The accumulated area of gaps between the tank wall and the secondary seal shall not exceed 21.2 cm^2 per meter of tank diameter, and the width of any portion of any gap shall not exceed 1.27 cm.

(C) There are to be no holes, tears, or other openings in the seal or seal fabric.

(iii) If a failure that is detected during inspections required in paragraph (b)(1) of § 60.113b(b) cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in § 60.115b(b)(4). Such extension request must include a demonstration of unavailability of alternate storage capacity and a specification of a schedule that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

(5) Notify the Administrator 30 days in advance of any gap measurements required by paragraph (b)(1) of this section to afford the Administrator the opportunity to have an observer present.

(6) Visually inspect the external floating roof, the primary seal, secondary seal, and fittings each time the vessel is emptied and degassed.

(i) If the external floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before filling or refilling the storage vessel with VOL.

(ii) For all the inspections required by paragraph (b)(6) of this section, the owner or operator shall notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel to afford the Administrator the opportunity to inspect the storage vessel prior to refilling. If the inspection required by paragraph (b)(6) of this section is not planned and the owner or operator could not have known about the inspection 30 days in advance of refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.

(c) The owner or operator of each source that is equipped with a closed vent system and control device as required in § 60.112b (a)(3) or (b)(2) (other than a flare) is exempt from § 60.8 of the General Provisions and shall meet the following requirements.

(1) Submit for approval by the Administrator as an attachment to the notification required by § 60.7(a)(1) or, if the facility is exempt from § 60.7(a)(1), as an attachment to the notification required by § 60.7(a)(2), an operating plan containing the information listed below.

(i) Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions. This documentation is to include a description of the gas stream which enters the control device, including flow and VOC content under varying liquid level conditions (dynamic and static) and manufacturer's design specifications for the control device. If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not designated sources under this subpart, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device. If an enclosed combustion device with a minimum residence time of 0.75 seconds and a minimum temperature of 816 °C is used to meet the 95 percent requirement, documentation that those conditions will exist is sufficient to meet the requirements of this paragraph.

(ii) A description of the parameter or parameters to be monitored to ensure that the control device will be operated in conformance with its design and an explanation of the criteria used for selection of that parameter (or parameters).

(2) Operate the closed vent system and control device and monitor the parameters of the closed vent system and control device in accordance with the operating plan submitted to the Administrator in accordance with paragraph (c)(1) of this section, unless the plan was modified by the Administrator during the review process. In this case, the modified plan applies.

(d) The owner or operator of each source that is equipped with a closed vent system and a flare to meet the requirements in § 60.112b (a)(3) or (b)(2) shall meet the requirements as specified in the general control device requirements, § 60.18 (e) and (f).

§ 60.114b Alternative means of emission limitation.

(a) If, in the Administrator's judgment, an alternative means of emission limitation will achieve a reduction in emissions at least equivalent to the reduction in emissions achieved by any requirement in § 60.112b, the Administrator will publish in the **Federal Register** a notice permitting the use of the alternative means for purposes of compliance with that requirement.

(b) Any notice under paragraph (a) of this section will be published only after notice and an opportunity for a hearing.

(c) Any person seeking permission under this section shall submit to the Administrator a written application including:

(1) An actual emissions test that uses a full-sized or scale-model storage vessel that accurately collects and measures all VOC emissions from a given control device and that accurately simulates wind and accounts for other emission variables such as temperature and barometric pressure.

(2) An engineering evaluation that the Administrator determines is an accurate method of determining equivalence.

(d) The Administrator may condition the permission on requirements that may be necessary to ensure operation and maintenance to achieve the same emissions reduction as specified in § 60.112b.

§ 60.115b Reporting and recordkeeping requirements.

The owner or operator of each storage vessel as specified in § 60.112b(a) shall keep records and furnish reports as required by paragraphs (a), (b), or (c) of this section depending upon the control equipment installed to meet the requirements of § 60.112b. The owner or operator shall keep copies of all reports and records required by this section, except for the record required by (c)(1), for at least 2 years. The record required by (c)(1) will be kept for the life of the control equipment.

(a) After installing control equipment in accordance with § 60.112b(a)(1) (fixed roof and internal floating roof), the owner or operator shall meet the following requirements.

(1) Furnish the Administrator with a report that describes the control equipment and certifies that the control equipment meets the specifications of § 60.112b(a)(1) and § 60.113b(a)(1). This report shall be an attachment to the notification required by § 60.7(a)(3).

(2) Keep a record of each inspection performed as required by § 60.113b (a)(1), (a)(2), (a)(3), and (a)(4). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

(3) If any of the conditions described in § 60.113b(a)(2) are detected during the annual visual inspection required by § 60.113b(a)(2), a report shall be furnished to the Administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made.

(4) After each inspection required by § 60.113b(a)(3) that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in § 60.113b(a)(3)(ii), a report shall be furnished to the Administrator within 30 days of the inspection. The report shall identify the storage vessel and the reason it did not meet the specifications of § 61.112b(a)(1) or § 60.113b(a)(3) and list each repair made.

(b) After installing control equipment in accordance with § 61.112b(a)(2) (external floating roof), the owner or operator shall meet the following requirements.

(1) Furnish the Administrator with a report that describes the control equipment and certifies that the control equipment meets the specifications of § 60.112b(a)(2) and § 60.113b(b)(2), (b)(3), and (b)(4). This report shall be an attachment to the notification required by § 60.7(a)(3).

(2) Within 60 days of performing the seal gap measurements required by § 60.113b(b)(1), furnish the

Administrator with a report that contains:

(i) The date of measurement.

(ii) The raw data obtained in the measurement.

(iii) The calculations described in § 60.113b (b)(2) and (b)(3).

(3) Keep a record of each gap measurement performed as required by § 60.113b(b). Each record shall identify the storage vessel in which the measurement was performed and shall contain:

(i) The date of measurement.

(ii) The raw data obtained in the measurement.

(iii) The calculations described in § 60.113b (b)(2) and (b)(3).

(4) After each seal gap measurement that detects gaps exceeding the limitations specified by § 60.113b(b)(4), submit a report to the Administrator within 30 days of the inspection. The report will identify the vessel and contain the information specified in paragraph (b)(2) of this section and the date the vessel was emptied or the repairs made and date of repair.

(c) After installing control equipment in accordance with § 60.112b (a)(3) or (b)(1) (closed vent system and control device other than a flare), the owner or operator shall keep the following records.

(1) A copy of the operating plan.

(2) A record of the measured values of the parameters monitored in accordance with § 60.113b(c)(2).

(d) After installing a closed vent system and flare to comply with § 60.112b, the owner or operator shall meet the following requirements.

(1) A report containing the measurements required by § 60.18(f) (1), (2), (3), (4), (5), and (6) shall be furnished to the Administrator as required by § 60.8 of the General Provisions. This report shall be submitted within 6 months of the initial start-up date.

(2) Records shall be kept of all periods of operation during which the flare pilot flame is absent.

(3) Semiannual reports of all periods recorded under § 60.115b(d)(2) in which the pilot flame was absent shall be furnished to the Administrator.

§ 60.116b Monitoring of operations.

(a) The owner or operator shall keep copies of all records required by this section, except for the record required by paragraph (b) of this section, for at least 2 years. The record required by paragraph (b) of this section will be kept for the life of the source.

(b) The owner or operator of each storage vessel as specified in § 60.110b(a) shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. Each storage vessel with a design capacity less than 75 m^3 is subject to no provision of this subpart other than those required by this paragraph.

(c) Except as provided in paragraphs (f) and (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa or with a design capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure greater than or equal to 15.0 kPa shall maintain a record of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period.

(d) Except as provided in paragraph (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure that is normally less than 5.2 kPa or with a design capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure that is normally less than 27.6 kPa shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor vapor pressure values for each volume range.

(e) Available data on the storage temperature may be used to determine the maximum true vapor pressure as determined below.

(1) For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based upon the highest expected calendar-month average of the storage temperature. For vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

(2) For crude oil or refined petroleum products the vapor pressure may be obtained by the following:

(i) Available data on the Reid vapor pressure and the maximum expected storage temperature based on the highest expected calendar-month average temperature of the stored product may be used to determine the maximum true vapor pressure from nomographs contained in API Bulletin 2517 (incorporated by reference—see § 60.17), unless the Administrator specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s).

(ii) The true vapor pressure of each type of crude oil with a Reid vapor pressure less than 13.8 kPa or with physical properties that preclude determination by the recommended method is to be determined from available data and recorded if the estimated maximum true vapor pressure is greater than 3.5 kPa.

(3) For other liquids, the vapor pressure:

(i) May be obtained from standard reference texts, or

(ii) Determined by ASTM Method D2879–83 (incorporated by reference—see § 60.17); or

(iii) Measured by an appropriate method approved by the Administrator; or

(iv) Calculated by an appropriate method approved by the Administrator.

(f) The owner or operator of each vessel storing a waste mixture of indeterminate or variable composition shall be subject to the following requirements.

(1) Prior to the initial filling of the vessel, the highest maximum true vapor pressure for the range of anticipated liquid compositions to be stored will be determined using the methods described in paragraph (e) of this section.

(2) For vessels in which the vapor pressure of the anticipated liquid composition is above the cutoff for monitoring but below the cutoff for controls as defined in §60.112b(a), an initial physical test of the vapor pressure is required; and a physical test at least once every 6 months thereafter is required as determined by the following methods:

(i) ASTM Method D2879–83 (incorporated by reference—see § 60.17); or

(ii) ASTM Method D323–82 (incorporated by reference—see §60.17); or

(iii) As measured by an appropriate method as approved by the Administrator.

(g) The owner or operator of each vessel equipped with a closed vent system and control device meeting the specifications of § 60.112b is exempt from the requirements of paragraphs (c) and (d) of this section.

§ 60.117b Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under Section 111(c) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States: Sections 60.111b(f)(4), 60.113b(c)(1), 60.114b, 60.116b(e)(3)(iii), 60.116b(e)(3)(iv), and 60.116b(f)(2)(iii).

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