

# Frequently Asked Questions

## **Directive 056 – Facilities Technical**

October 2017

This document clarifies and supports some of the technical requirements related to *Directive 056: Energy Development Applications and Schedules* facility applications. The questions below address common omissions or errors.

### **Pop Tank**

**Q1. What is a pop tank?**

A1. An open tank, as referred to in section 8.031 of the *Oil and Gas Conservation Rules (OGCR)*. The relief device from a pressure vessel receiving oil well production is connected to the pop tank through suitable piping. The tank must be designed such that when the pressure-relief device activates, the tank can safely manage the pressure and flow and withstand the increase in pressure without being damaged.

**Q2. When is a pop tank required?**

A2. Section 8.031 of the *OCGR* states that “where a pressure relief valve, rupture disk or burst plate is installed on a separator, treater or other pressure vessel which receives production from an oil well, the licensee shall connect the valve, rupture disk or burst plate fitting by suitable piping to an open tank.” Wells producing more than 10 moles per kilomole of H<sub>2</sub>S must also comply with section 7.060(3.1) of the *OGCR*.

**Q3. What is an adequately sized pop tank?**

A3. The tank must be sized such that it can hold all the liquid that could be produced through the pressure-relief device from the moment it is activated until the pressure vessel is isolated and flow into the pop tank stops.

**Q4. Can a knock out drum be used as a pop tank?**

A4. Yes, a knock out drum that does not impede the relieving of the pressure vessels would be considered an open tank and therefore could be used as a pop tank. Using the knock out drum as a pop tank does not preclude it from its primary use as a knock out drum during normal operations. The knock out drum must safely manage the pressure and flow, must be adequately sized (see above), and must meet all the requirements of *Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting*.

**Q5. Do pop tanks need to meet the requirements for secondary containment or spacing for oil storage tanks?**

A5. If used appropriately, pop tanks do not need to meet the requirements for secondary containment or spacing for oil storage tanks. Section 3.4.1 of *Directive 055: Storage Requirements for the Upstream Petroleum Industry* specifies that if pop tanks are “used to infrequently store fluids for very short durations,” are emptied immediately after use, and are regularly inspected to verify their integrity, they do not require secondary containment.

**Q6. Can I use a storage tank as a pop tank?**

A6. A storage tank may be used as a pop tank provided that controls are put in place to ensure that there is adequate volume remaining in the tank when it is “full” of production fluid that it will not overflow during an emergency release.

**Q7. Can I use a pop tank as a drain tank?**

A7. Pop tanks should only be used for emergency purposes. While a pop tank is being used as a drain tank, it cannot function as a pop tank. Therefore, pop tanks can only be used as a drain tank when

- the drain lines to the pop tank are manually controlled and normally closed,
- production to the vessel is shut in and the vessel is isolated for the duration of time that the pop tank is being used as a drain tank, and
- the valve is closed and the pop tank emptied and cleaned before the vessel is brought back into operation.

**Q8. Can an applicant file a routine application if it does not intend to install a pop tank at a new oil facility where the H<sub>2</sub>S content is less than or equal to 10 mol/kmol ( $\leq 0.04$  m<sup>3</sup>/h H<sub>2</sub>S release rate for heavy oil/oil sands)?**

A8. Yes, an applicant can file a routine application if it meets all requirements for filing routine applications in section 3.8.1 of *Directive 056*. This includes providing supporting information demonstrating compliance with technical requirements. If an applicant wishes to file routinely, it must include with the application a cover letter and piping and instrumentation diagram confirming the following:

- The pressure setting of the relief devices will not exceed the rated maximum operating pressure of the vessels.
- Each pressure vessel will be equipped with its own high-pressure and high-level sensors and controls.

- Sensors and controls will be connected to a valve installed on the inlet of the vessel that will shut off the flow of fluids into the vessel in the event of a high-pressure or high-level occurrence.
- The pressure setting of the high-pressure sensors and controls will not exceed 90 per cent of the relief devices' pressure setting.
- One or more isolation valves will be installed between the high-pressure sensor and the pressure vessel to facilitate testing of the sensor.
- High-pressure and high-level sensors and controls will be function tested every calendar quarter to ensure that they are working correctly. A tag must be placed on the controls indicating the last test date.
- Sensors and controls will be replaced or repaired immediately if they are defective or nonfunctional.
- High-pressure and high-level sensors and controls will be calibrated annually (i.e., once every four calendar quarters). A tag must be placed on the controls indicating the last calibration date.
- If the pressure-relieving device is directed to the atmosphere, *Directive 060* venting requirements must be met.
- Function testing and calibration logs will include the following data elements: pressure vessel identification, the date of the test or calibration of each sensor/control, pass or fail (i.e., working/nonworking) status of sensors and controls, and repair/replace status (action).
- Log records must be maintained for one year from the date of testing/calibration.

If an applicant is unable to confirm that it will meet the above conditions, it may submit an application nonroutinely together with supporting information that demonstrates that the degree of protection provided by a proposed system of automatic controls or other method of avoiding oil spills is equivalent to or better than the venting of relief devices to an open tank.

**Q9. Can a pressure-relief device be connected to a vapour recovery unit (VRU) or scrubber system?**

A9. Yes, provided that the VRU or scrubber system is either connected to a knockout drum or is designed to handle released fluids while maintaining its function. The system must be connected using suitable piping, and *Directive 060* requirements must be met.

**Q10. Can an applicant file a routine application at a new oil facility where the H<sub>2</sub>S content is greater than 10 mol/kmol (>0.04 m<sup>3</sup>/h H<sub>2</sub>S release rate for heavy oil/oil sands) and the pressure-relief devices are directed to atmosphere?**

A10. Yes, an applicant can file a routine application if it includes information with the application confirming that it meets all of the requirements for a facility where the H<sub>2</sub>S content is less than or equal to 10 mol/kmol (see above), and that when the pressure-relieving device is directed to the atmosphere, there will be redundant (i.e., two sets of) sensors and controls for both high pressure and high level installed on the pressure vessel.

Applicants must attach a cover letter and a piping and instrumentation diagram to the application confirming that all of these conditions will be met. If an applicant is unable to meet the above conditions, it must submit a nonroutine application requesting that a waiver be granted.

**Q11. Can an operator direct a pressure-relief device at an oil facility where the H<sub>2</sub>S content is greater than 10 mol/kmol (>0.04 m<sup>3</sup>/h H<sub>2</sub>S release rate for heavy oil/oil sands) to a pop tank?**

A11. A pop tank is by definition open to atmosphere; therefore, if an operator directs a pressure-relief device at an oil facility where the H<sub>2</sub>S content is greater than 10 mol/kmol (>0.04 m<sup>3</sup>/h H<sub>2</sub>S release rate for heavy oil/oil sands) to a pop tank, there must be redundant (i.e., two sets of) sensors and controls for both high pressure and high level installed on the pressure vessels.

**Q12. An operator has an existing site without pop tanks or wants to remove the pop tank. Is an application required?**

A12. If the existing site has no pop tank or the operator is proposing to remove it, providing that the above criteria (for routine submissions) are met, an application is not required. If the existing site has no pop tank or the operator is proposing to remove it and the above criteria have not been met, the operator is required to obtain a waiver from Authorizations. Information on how to make an application can be found at <http://www.aer.ca/applications-and-notice/application-process/operational-authorizations-production-operations.htm>.

### Tank Heater

**Q13. Can an operator use a flame-type tank heater for conventional oil (i.e., density is less than 920 kg/m<sup>3</sup>)?**

A13. Yes, an operator may use a flame-type tank heater provided that

- 1) the oil has a density greater than 800 kg/m<sup>3</sup> and less than 920 kg/m<sup>3</sup>;

- 2) the burner
  - a) is totally enclosed except for the combustion air intake and exhaust discharge,
  - b) is equipped with an adequate flame-arresting device on the combustion air intake,
  - c) is equipped with an adequate flame-arresting device on the exhaust discharge (where applicable), and
  - d) for all surfaces exposed to the atmosphere, is operating below the ignition point of any flammable substances within the area or is mechanically shielded to prevent any flammable substances from contacting the surface;
- 3) all sources of ignitable vapours (e.g., load lines, vent lines) are directed away from the flame-type equipment or heating device (it is recommended that the thief hatch be as far away as possible from the flame-type equipment and exhaust discharge);
- 4) when in operation, a minimum one metre liquid level is maintained above the fire tube or tank heating device;
- 5) an automatic shutdown system for the heater is used and maintained to ensure a safe operating liquid level (a low-level alarm system is acceptable for manned operations);
- 6) the tank is equipped with a fluid temperature sensing device and indicator (e.g., thermometer) located on the bottom half of the tank (burner management systems with the required temperature shutdowns are also acceptable);
- 7) the maximum temperature of the fluid in the tank does not exceed 40°C;
- 8) safe start-up procedures for the heating device or an enclosed ignition system are used; and
- 9) the total daily vented gas volume from the tank does not exceed 500 m<sup>3</sup>/day.

**Q14. Can an operator use a flame-type tank heater for heavy oil with a density greater than 920 kg/m<sup>3</sup>?**

A14. Yes. In accordance with *Interim Directive 91-03: Heavy Oil / Oil Sands Operations*, an operator may use a flame-type tank heater. In these cases, it is recommended that the operator adhere to the safety parameters listed in A13, with the exception of items 7 and 9. Operators must also comply with section 8.090(8) of the *OGCR*.

## Spacing

**Q15. I would like to amend an existing facility where the equipment on site does not meet spacing requirements. The original application was submitted and approved through the nonroutine process due to the spacing requirements not being met. Do I have to submit a nonroutine application again?**

A15. A nonroutine application is not required if the applicant can confirm the following at the time of the application:

- A nonroutine technical application was previously submitted due to spacing requirements not being met and the spacing issues were reviewed and accepted.
- Any new equipment being added meets all spacing requirements.
- Any existing equipment that may have been moved or replaced continues to meet all spacing requirements.

Applicants must attach a cover letter to the application confirming the above items.

If an applicant is unable to meet the above conditions, it must obtain a spacing waiver by submitting a nonroutine application. For additional information, please see *Directive 056*, schedule 2, step 6.

**Q16. Is there anything else I need to submit with my facility application when requesting an equipment spacing exemption?**

A16. All applications requesting equipment spacing exemptions must include

- an explanation of what equipment will not meet the spacing requirements and why the equipment will not meet the spacing requirements;
- the distances between the pieces of equipment that will not meet spacing requirements;
- a description of the fluids involved;
- a list of all sources of gaseous vapours;
- an explanation of how safety will not be compromised if the equipment spacing exemption is granted, including a safety assessment and a response time for call out (i.e., the time required to respond to an emergency); and
- a description of all automatic controls on site, including a description of the emergency shutdown valves.

If the reason for requesting the equipment spacing exemption is terrain, you must also include a topographic map to confirm that this is the case. Further site-specific information may be required during the AER's review of the application.

**Q17. Is there anything else I need to submit with my facility application when requesting an equipment spacing exemption for equipment that has already been constructed?**

A17. Provide answers to the following questions in addition to submitting the information required in the question above:

- When was the site constructed?
- When was the equipment that does not meet equipment spacing requirements installed?

Further site-specific information may be required during the AER's review of the application.

Note: The above answers do not apply when requesting a water body spacing exemption (see *Directive 056*, section 5.14.1, step 6[2]).

**Emissions**

**Q18. What value should I enter in schedule 2 under Design Criteria > Total Continuous Emissions Rates?**

A18. In schedule 2 under Design Criteria > Total Continuous Emissions Rates, the value that should be entered for NO<sub>x</sub>, CO<sub>2</sub>, Flaring/Incineration, and Venting boxes should be the anticipated average continuous operational emissions rates, not the maximum engineered emission design rates. This value should not include volumes attributed to emergency or maintenance venting.