Operations – Regulated Tank and Containment Inspections

SCOPE

This procedure describes steps that must be taken to meet regulatory requirements for inspection of petroleum hydrocarbon (oil) storage tanks, secondary containments, overfill protection systems, and tank truck loading and unloading areas. Petroleum hydrocarbon materials include crude oil, produced water, diesel, gasoline, transmission fluid, hydraulic oil, motor oil, mineral oil, chemicals with petroleum hydrocarbon components, and plant-based oils exhibiting oil-like characteristics.

OVERVIEW

The Alaska Department of Environmental Conservation (ADEC) regulates stationary and portable aboveground oil storage tanks with capacity greater than 10,000 gallons (18 AAC 75). ADEC-regulated tanks are listed in the Oil Discharge Prevention and Contingency Plan (ODPCP or C-Plan) for each operating area. ADEC-regulated tanks, overfill protection components, and tank truck loading areas (TTLA) are inspected monthly at a minimum. Secondary containments for ADEC-regulated tanks are inspected weekly at a minimum. Procedures specific to ADEC-regulated tank and containment inspections are located in SkillsNow (ENVIR-TANKS-INSP-0001) for Kuparuk and are detailed in applicable PMs for Alpine.

Additionally, oil storage tanks and containers with capacity 55-gallons or greater are regulated by the Environmental Protection Agency (EPA) (40 CFR 112) and compliance is managed through each operating area's Spill Prevention, Control, and Countermeasure Plan (SPCC Plan). EPA-regulated tanks and components are inspected on a 6-month frequency at a minimum and by additional Preventative Maintenance Orders (PMO) for certain types of tanks.

Regulated oil storage tanks may not be placed into service without approval in accordance with the Asset Integrity-managed Tank Management Program Manual. Under the Tank Manual, ADEC-regulated oil storage tanks are considered Category A tanks and are inspected in accordance with applicable requirements in 18 AAC 75, which specifies use of industry standards API 12R1, API 653, or STI SP001. EPA-regulated oil storage tanks and containers (i.e., SPCC-regulated) are considered Category F, G, or GG based

on containment and capacity conditions and required inspections include periodic visual operational checks and integrity testing by certified inspectors. Note that newly acquired regulated tanks (new, used, or rented) shall be approved for use through the Pre-Operational Tank Inspection Checklist (POTICL) process, as outlined in the Asset Integrity Tank Manual, before the tank is released for service. Outstanding items found during the POTICL process will be addressed and the tank must be added to the facility C-Plan prior to placing the tank into operation. The facility SPCC Plan must be amended within 6 months after start of service. Inspection procedures and responsibilities are established during the POTICL approval process. Area C-Plans and SPCC Plans are accessible via The Mark on the Alaska Emergency Plans Page.

As a best practice and to ensure all regulatory requirements are met, when safety and weather conditions allow, visual inspection of facilities is performed daily as part of normal business operations. Any sign of damage or leaks should be reported to the area supervisor as soon as possible. Due to regulatory requirements for inspections it is extremely important that inspection PMOs be technically completed (TECO'd) on time.

PROCEDURE

Secondary Containment Inspections

1. Operators must inspect and document the condition of secondary containment surrounding regulated tanks at regulatory-defined frequencies.. Required visual inspections are documented on the designated log sheet or PMO. See S-005 Support Services – ADEC Regulated Secondary Containment Inspections for full procedures, responsibilities, and recordkeeping requirements for ADEC-regulated weekly secondary containment inspections. Instructions for EPA-regulated secondary containment visual inspections are provided in the PMO.

2. Tanks with secondary containment waivers under the C-Plan must be checked and documented every shift or 12 hours. Consult your area supervisor or Environmental Coordinator to determine whether there are any waivered tanks in your work areas.

3. The checks require a visual survey for obvious damage to containment integrity, the presence of spill residue, or the presence of debris, vegetation, or other materials or conditions that might interfere with the effectiveness of the system. Containments

used for ADEC and EPA-regulated tanks, unless a waiver has been approved, are required to hold 100% of the full physical volume of the largest tank inside the containment plus additional volume for precipitation. General rule-of-thumb containment size is 110% of the volume of the largest tank. Secondary containment volume must be verified for compliance. Accumulated, excessive rainwater or snowmelt must be removed in a timely manner as it reduces the holding capacity of the containment and may result in a finding of regulatory non-compliance. The Operator must document the secondary containment checks as required. Containment fluids may not be released to gravel pad or tundra without prior approval and must be documented.

4. Any damage to or compromise of secondary containment integrity or holding capacity should be reported to the appropriate supervisor immediately. ADEC must be notified in writing within 24 hours when a secondary containment fails to meet performance requirements. Environmental will manage the agency notifications.

5. Discrepancies requiring corrective actions should be entered in the field maintenance management system (SAP Notification) to be repaired or addressed.

6. Significant **planned repairs** to containment, such as removing/replacing liners and/or changing structure or configuration, also require ADEC notification and may entail obtaining a waiver from ADEC during the service work. Contact the appropriate supervisor and Environmental prior to taking any tank containment out of service during maintenance or repairs.

7. Secondary containment around flammable liquid tanks is regulated under fire codes, and Fire Marshal permits/approvals. Planned or unplanned events that make these containments unserviceable must be managed in coordination with the Fire Protection Engineer. Report damage or planned work to these containment areas to Environmental. Environmental will contact the Fire Protection Engineer. There are additional North Slope Borough regulations that apply to fuel tanks at or greater than 660 gallons.

8. Contact your Superintendent or Lead Operator to identify regulated tanks in your area, waivered tanks, and the local process for documentation of inspections.

Loading and Unloading Area Inspections

1. The operator of a TTLA must maintain those areas free of debris, vegetation, excessive accumulated water or other materials that might interfere with the effectiveness of the system.

2. The secondary containment must be sufficiently impermeable and warning lights, signs or physical barriers must be in place to prevent premature vehicle movement.

3. These areas must be visually inspected before any transfer or at least monthly at a minimum. Requirement for documented monthly visual inspection may be met by PMO. Contact Environmental or your supervisor or Lead Operator to determine inspection requirements.

Tank Visual Inspections

1. Documented routine tank visual inspections are managed by PMO and occur on a monthly frequency (ADEC-regulated tanks) or up to a 6-month frequency (EPA-regulated tanks) depending on the tank. The routine tank inspection includes a visual inspection of the tank exterior surface and associated piping, a check of the overfill protection system, if applicable, as well as the following:

    - Evidence of leaks or leak residual (informal visual inspections are performed daily during normal operations at facilities, safety and weather conditions permitting)
        - For double wall tanks without additional containment – examine the interstitial space monitoring system (lowermost drainage valve, view port/hatch, or separate level indicator) for the presence of leaked fluids. If tank is not equipped with an interstitial space monitoring system use routine visual of the tank exterior and verify fit-for-service through regularly scheduled external NDE and/or internal inspections.
    - Tank shell distortion
    - Signs of settlement
    - Corrosion
    - General condition of the foundation

- Paint coating condition
- Appurtenances condition (i.e., connections, piping, support structure, access hatches, etc.)
- Insulation systems – note that damaged metal insulation jackets can allow water to infiltrate and saturate the insulation creating an environment for increased external tank shell corrosion (known as corrosion under insulation or CUI). Tips for insulation integrity inspection can be found in the Asset Integrity Tank Manual and include:
    - Visually inspect insulation jackets for breaks. Pay attention to penetrations for nozzles, manways, ladder supports, stairway supports, and instrumentation. Insulation bulging, especially on roofs or near the shell bottom, can be an indication of wet insulation. The bulge can be caused by freezing or the absorption of water by calcium-silicate materials.
    - Visually inspect the bottom of the insulation, where water may collect, for evidence of moisture.
    - Exposed and accessible clips, bands, or other devices used to attach the insulation to the tank should be visually inspected and spot-checked for tightness, corrosion, and mechanical damage.
- Facility oil piping – piping associated fittings including all valves, elbows joints, flanges and flexible connectors originating from or terminating at a regulated tank.

Any discrepancies requiring corrective actions should be noted on the PM and entered in the field maintenance management system (SAP Notification) to be repaired or addressed.

Overfill Protection

ADEC-regulated tanks are required to comply with the following:

1. Tanks must be equipped with one or more of the following overfill prevention:
    - High liquid level alarm with audible and visual signal,
    - High liquid level automatic pump shut-off, or

- A means to immediately determine liquid level; the level must be closely monitored during transfer

2. Overfill protection devices must be tested “before each transfer operation or monthly, whichever is less frequent.” Most of these requirements are met and documented by monthly PMO.

3. Monthly testing of the overfill protection devices is accomplished by comparing the primary instrumented liquid level indicating device with an independent liquid level reading. Examples of independent liquid level devices may include another redundant level indicating device on the tank, tank strapping, or visual fluid indications in a sight glass. The two liquid levels must agree within a range specified in the PMO, or the discrepancy addressed via the work order system. The confirmation of the liquid level by this method provides assurance that the primary liquid level indicator is sufficiently accurate to actuate the high-level alarm and prevent an overfill or discharge condition.

4. In addition to monthly testing, an overfill systems check must be performed by control room operators on a weekly basis for tanks with secondary containment waivers.

5. Systems under continuous flow that cannot be interrupted may be tested annually. PMOs are in place to function test the high-level alarm instrumentation on the primary liquid level indicator for regulated storage tanks. This provides assurance that the primary high-level alarm will activate and notify Operations to take action to avoid an overfill.

Production facility EPA-regulated tanks (40 CFR 112.9) must be provided with at least one of the following:

1. Container capacity adequate to assure that a container will not overfill if a pumper/gauger is delayed in making regularly scheduled rounds.
2. Overflow equalizing lines between containers so that a full container can overflow to an adjacent container.
3. Vacuum protection adequate to prevent container collapse during a pipeline run or other transfer of oil from the container.
4. High level sensors to generate and transmit an alarm signal to the computer where the facility is subject to a computer production control system.

Non-production facility EPA regulated tanks (40 CFR 112.8) must be provided with at least one of the following devices:

1. High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities an audible air vent may suffice.
2. High liquid level pump cutoff devices set to stop flow at a predetermined container content level.
3. Direct audible or code signal communication between the container gauger and the pumping station.
4. A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers.
5. Regularly test liquid level sensing devices to ensure proper operation.

EPA-regulated double-wall tanks are an accepted form of secondary containment if they meet the following criteria set forth by EPA:

1. Containers are shop fabricated;
2. The inner tank is an Underwriter Laboratories (UL)-listed steel tank;
3. The outer tank is constructed in accordance with nationally accepted industry standards (e.g., API, STI, the American Concrete Institute);
4. Equipped with the following overfill prevention measures to contain overfills from tank vents:
    a. Overfill alarm,
    b. Automatic flow restrictor or flow shut-off; and
5. All product transfers are constantly monitored.

Alternative to Overfill Prevention Measures: As an alternative to the overfill prevention measure described in the fourth bullet above, the container may be equipped with either active or passive secondary containment methods to address the typical failure mode and

the most likely quantity of oil that would be discharged from the tank's vents during transfer operations.

- **Active Containment** - a containment measure that involves a certain action by facility personnel before or after the discharge occurs. The actions are also referred to as spill countermeasures.
- **Passive Containment** - : a containment measure that remains in place regardless of the facility operations and therefore does not require an action by facility personnel.

Contact Environmental at 659-7242 (Kuparuk) or 670-4200 (Alpine) with any questions