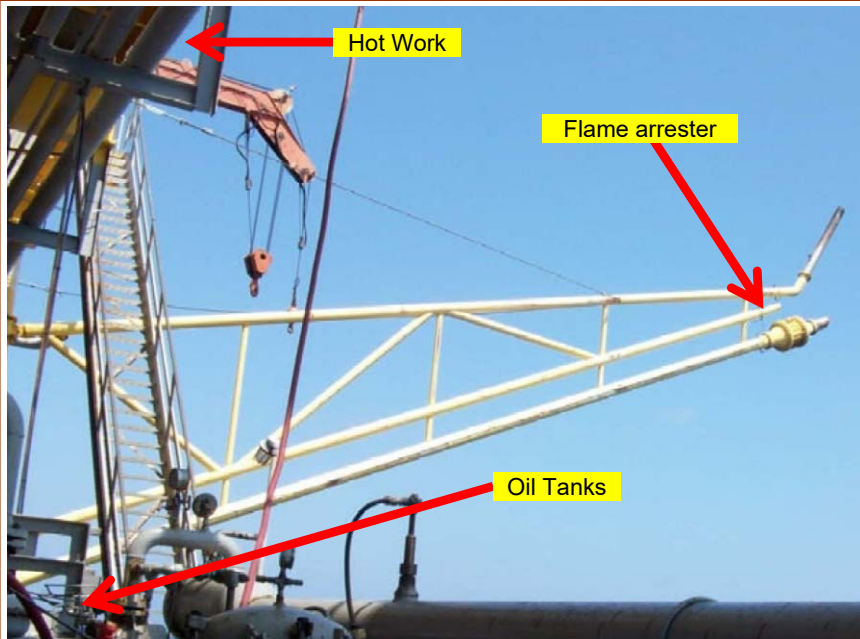


Plugged flame arrester causes explosion!

April 2016



Maintenance workers were doing hot work on an offshore platform, approximately 12 feet (3.7 m) above several oil storage tanks. There was an explosion which ruptured two oil tanks causing about \$500,000 (US) damage and spilling approximately 1,200 US gallons (4.5 cu m) of oil into the sea.

The incident investigation found the following:

- The flame arrester on an oil tank was corroded and plugged with deposits. This resulted in the tank “breathing”

through a sample hatch at the tank rather than through the flame arrester as intended. When it was hot, during the day, vapors would exit the tank through the hatch. Air would enter the tank through the hatch at night when it was cool.

- A sign on the flame arrester indicated that it should be “periodically serviced for safe operation.”
- The flame arrester was installed at the end of a flare boom and could not be easily accessed for inspection or maintenance.
- The oil tanks were not blanketed with inert gas, or protected from fire, sparks, or other potential ignition sources during the hot work. This was required by US regulations for offshore platforms because the hot work was near the oil tanks [30 CFR 250.113(a)].

REFERENCE: U.S. Department of the Interior, Bureau of Ocean Energy Management, Safety Alert No. 290, 14 October 2010.

What can you do?

- On land or water, flame arresters are important safety devices. Make sure that flame arresters in your plant are inspected and maintained as recommended by your plant engineers and the manufacturer.
- If a flame arrester or other important safety device is in a location where required inspection and maintenance is difficult or impossible, report the problem to your management so it can be corrected.
- Many regulations, industry guidelines, or company policies require a minimum distance between welding or hot work, or from a point where slag, sparks, or other burning materials could fall, and equipment containing flammable or combustible material. If moving equipment is impractical, the equipment must be protected with flame-proofed covers, inerted, or shielded with metal or fire resistant guards or curtains.

Flame arresters need inspection and maintenance!

©AIChE 2016. All rights reserved. Reproduction for non-commercial, educational purposes is encouraged. However, reproduction for any commercial purpose without express written consent of AIChE is strictly prohibited. Contact us at ccps_beacon@aiiche.org or 646-495-1371.