

Transmission Incident History

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2016 Incident – 371227

- Transmission line damage during construction of parallel line.
- Two contractor crews called in one-call tickets.
- Neither ticket covered the scope of the damage area.
- 10-inch steel, 0.250 wall, 976 psig MAOP.
- No fatalities, injuries, or release.
- MCL 460.725(1): Damage location was not within the scope of a one-call ticket.



2016 Incident – 368225

- Leak on 12-inch transmission line found during leak survey.
 - Leak determined to be loose bolts on Mueller pressure control fitting (2010 install).
 - 8-day delay in repairing leak due to 17-foot depth. Operator continuously monitored leak until repair was made.
 - Damages \$76,558.
- 460.20503(1)(b): Late reporting. MPSC Day 8 and PHMSA Day 22.
- Recommend leak survey records document where leaks were discovered.
- Recommend customer outages do not play factor in pressure reductions.

2016 Incident – 387129

- Second-party damage during integrity dig.
- 4-inch welded tee on 10-inch pipeline was hit by excavator and cracked.
- 4-inch tee and associated piping was not shown on maps.
- Gas blew over 24 hours. Isolated via stopple and an existing valve.
- 192.614(a): Failure to hand expose the gas line within the caution zone prior to using power equipment.



2017 Incident - 428725

- Transmission overpressure in a regulating station.
- Pressures reached 500 psig between regulator and relief. MAOP 400 psig.
- Primary regulator failed due to hydrocarbons in the gas stream.
- The relief valve functioned as designed, protecting the downstream transmission line from an overpressure.
- \$123,800 damages from environmental cleanup.



2017 Incident – 428725 Cont.

- Recommend review procedures regarding monitoring liquid levels at separators. Inlet and outlet separators discovered full of liquids.
- Potential Source #1: Inadequate free-liquid capture at underground storage fields.
- Potential Source #2: Failure to adequately recover liquids from pigging operations. 1,800 gallons of cleaning liquids not recovered during pigging operation 5 months prior.



2017 Incident – 424729

- Compressor blowdown fire.
- New compressor plant was being commissioned when one compressor unit shut down and vented to the blowdown stack.
- Ignition occurred at outlet of blowdown silencer due to electrostatic discharge from entrained water droplets or debris within venting system.
- \$429,430 damages.
- 1.417 MMcf gas loss.



2017 Incident – 424729 Cont.

- Blowdown silencer not designed to prevent rainwater and debris from entering the top and collecting in the bottom.
- Design of blowdown silencer allowed for turbulent flow.
- No process for inspecting and draining blowdown silencers. The drain line was plugged at the bottom of the silencer.



2017 Incident – 424729 Cont.

- Operator and manufacture of the blowdown silencer did not have a process for reviewing the design for the potential of static discharge.
- Manufacturer of the blowdown silencer did not provide preventative maintenance recommendations.
- Recommend operator provide their root cause analysis report and their third-party expert's report to the blowdown silencer manufacturer.

2017 Incident – 432829

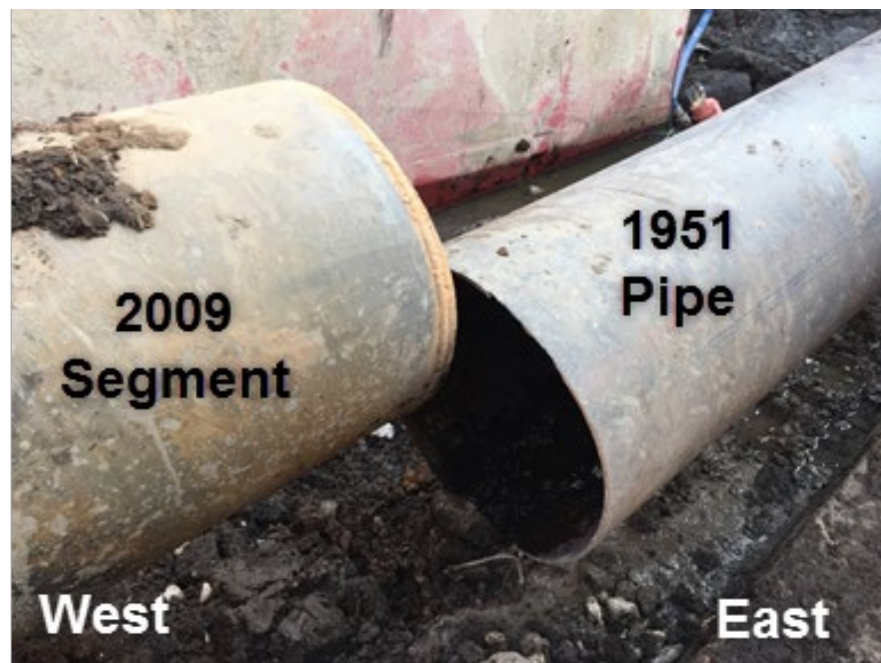
- Transmission pipeline rupture and ignition.
- Constructed in wetland muck deposit in 1951.
- External stress due to soil burden placed over the pipeline.
- Pipeline segment had a history of stresses induced by changes in elevation profile attributed to buoyancy and excessive filling.
- \$6,267,710 damages.
- 344 MMcf gas loss.



2017 Incident – 432829 Cont.

- 192.225(a): Girth weld defects present from 2009 integrity cut-out. This weld was not in compliance with API 1104 and should not have passed visual or radiographic inspection.
 - Incomplete fusion (IF), Incomplete fusion due to cold lap (IFD), and Porosity. The IF at the outer diameter served as a stress riser and the failure initiation point.
 - 2009 segment was not tapered on the inside wall to match with the thinner-walled 1951 pipe. The lack of taper was not in compliance with ASME B31.8.
 - Significant offset (up to 0.155 inches) between the 2009 segment and the 1951 pipe at the failed girth weld location. This is indicative of inadequate fit-up prior to starting the welding.
 - The failed girth weld was made with the connecting pipe ends already placed under stress to achieve fit-up.

2017 Incident – 432829 Cont.



2017 Incident – 432829 Cont.

- 192.705(a): Patrols failed to document encroachments and the presence of additional fill placed on the pipeline.
- 192.917(b): Operator personnel had previously identified several concerns on the pipeline that were not intergraded into TIMP.

2017 Incident – 407141

- Leak discovered in an HCA as line brought back into service.
- Gas pressure reached 650 psig on a line with MAOP of 1000 psig.
- Crack discovered on a tie-in weld.
- Also located failures at numerous “tie-in” welds.
- Welder, weld inspector, and NDT technician exhibited poor performance despite current qualifications.



2017 Incident – 407141 Cont.

- 192.503(a): Failure to pressure test a new segment of pipeline in accordance with Subpart J and 192.619 to substantiate MAOP.
 - Pre-test performed in pipe yard.
 - Segments were cut into smaller sections.
 - Sections were hauled to the site, and reassembled.
- Test Segment 1: Cut into 2 sections.
- Test Segment 3: Cut into 12 sections.
- Test Segment 4: Cut into 3 sections.
- Test Segment 5: Cut into 2 sections.

2017 Incident – 432341

- Third-party damage on a 12-inch transmission line operated by distribution.
- \$105,918 damages.
- Poor communication between operator and locator facilitated lack of understanding between active and inactive facilities.



2017 Incident – 432341 Cont.

- 460.20503(1)(b): Late reporting. Reported an incident to the MPSC and PHMSA 50 days after the date of the incident.
- 192.614(a): Staking not accurate. Active pipeline was more than 10-feet away from line that was marked.



2017 Incident – 432341 Cont.

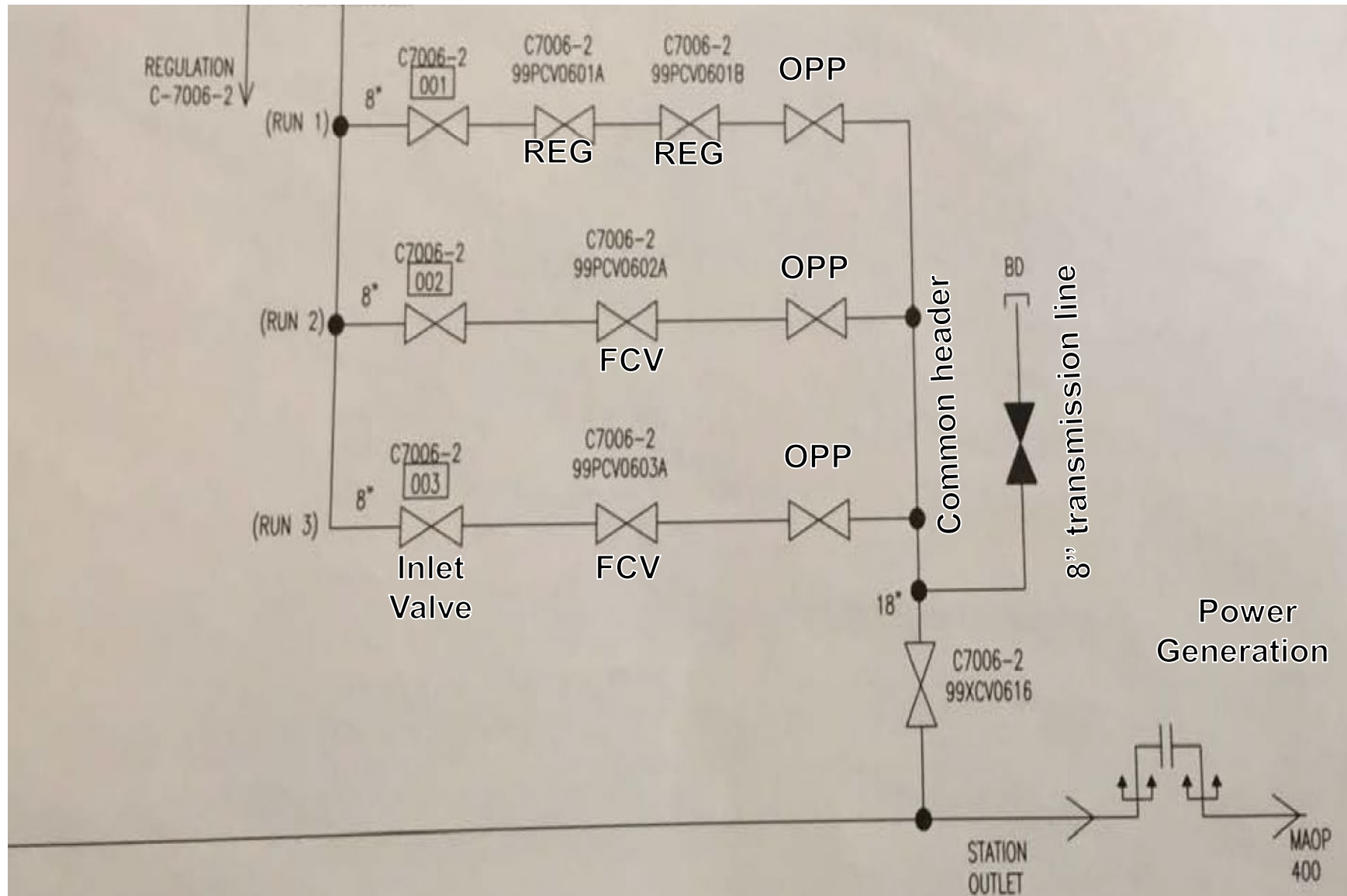
- Recommend operator adopt the Michigan Damage Prevention Board Best Practice entitled “Abandoned/Idle Facilities,” and provide sufficient information to excavators regarding the characteristics and location of abandoned facilities, up to and including staking abandoned facilities where necessary to avoid confusion.
- Recommend operator provide additional information in the ticket management system that includes, where applicable, information regarding the presence and location of abandoned facilities and photographic evidence of the staking that was conducted.
- 192.935(d)(2): Recommend operator personnel be on-site whenever there is work occurring around its transmission facilities, regardless of whether or not the facility has been exposed.

2018 Incident – 436025

- Overpressure on one operator caused by backpressure from another operator. 42% exceedance of MAOP. Pressure-control valve failure combined with incorrect operations.
- 2.8 miles.
- 8-inch steel transmission.
- Lasted almost 6 hours.



2018 Incident – 436025 Cont.



2018 Incident – 436025 Cont.

- Operator #1 Violations:
 - 192.605(a): Flow control valves and overpressure protection valves not tested prior to being returned to service on the day of incident.
 - 192.605(b)(5): Failure to have procedures for cycling gas flow.
 - 192.605(c)(1): Failure to have procedures for responding to, investigating, and correcting the cause of an increase in pressure above outside normal operating limits or the operation of any safety device.

2018 Incident – 436025 Cont.

- Operator #1 Recommendations:
 - Provide training to ensure individuals performing covered tasks have the necessary knowledge, skills, and abilities.
 - Monitor outlet pressures with SCADA alarms or text message notification.
 - Develop AOC procedure to leak survey pipelines that experienced an overpressure.
 - Develop AOC procedure to check variations from normal operation after abnormal operation.
 - Install actuator on existing valve on 8-inch transmission line as redundant OPP.

2018 Incident – 436025 Cont.

- Operator #2 Violations:
 - 192.195(a): Lack of OPP installed at regulating station to protect the station from an MAOP exceedance from Operator #1. No verification that Operator #1 facilities are protecting operator #2 piping.
 - 192.605(c)(1)(ii): Operator #2 was aware of overpressure on Operator #1 pipeline but did not communicate with them for three hours. O&M did not contain procedures for an overpressure when the cause may have been another operator.

2018 Incident – 467425

- Dehydration fire at storage field on glycol reboiler manufactured by Smith Industries and installed in 1982.
- Dehydration unit's controller caused the fuel train regulator to continue to feed fuel to the burner, causing the diethylene glycol to boil over and ignite.
- Dehydration unit remained in the withdrawal cycle mode when field was shut in.



2018 Incident – 467425 Cont.

- Gas control did not receive any high-high temperature alarms.
- \$2,679,477 damages.
- Recommend operator implement proposed corrective actions regarding the dehydration unit operational state:
 - Establish annual date criteria for placing dehydration units into withdrawal and injection cycle operation as appropriate.
 - Withdrawal cycle in-service criteria shall include testing of applicable SCADA alarms on-site and in Gas Control.
 - Establish a work order process/standard to ensure unit start-up and shut-in is completed and on a regular schedule.

2018 Incident – 467425 Cont.

- Recommend operator perform a system-wide study to identify similar situations where alarm set points are equal to or greater than the range of the equipment. Recommends that all alarm set points (not just temperature) fall within the range of the equipment to ensure the creation of an alarm if an unsafe condition occurs.
- Recommend operator consider temperature alarms to be safety related for those stations that have dehydration or heating equipment that do not have gas, smoke, or fire detection alarms.

2018 Incident – 467425 Cont.

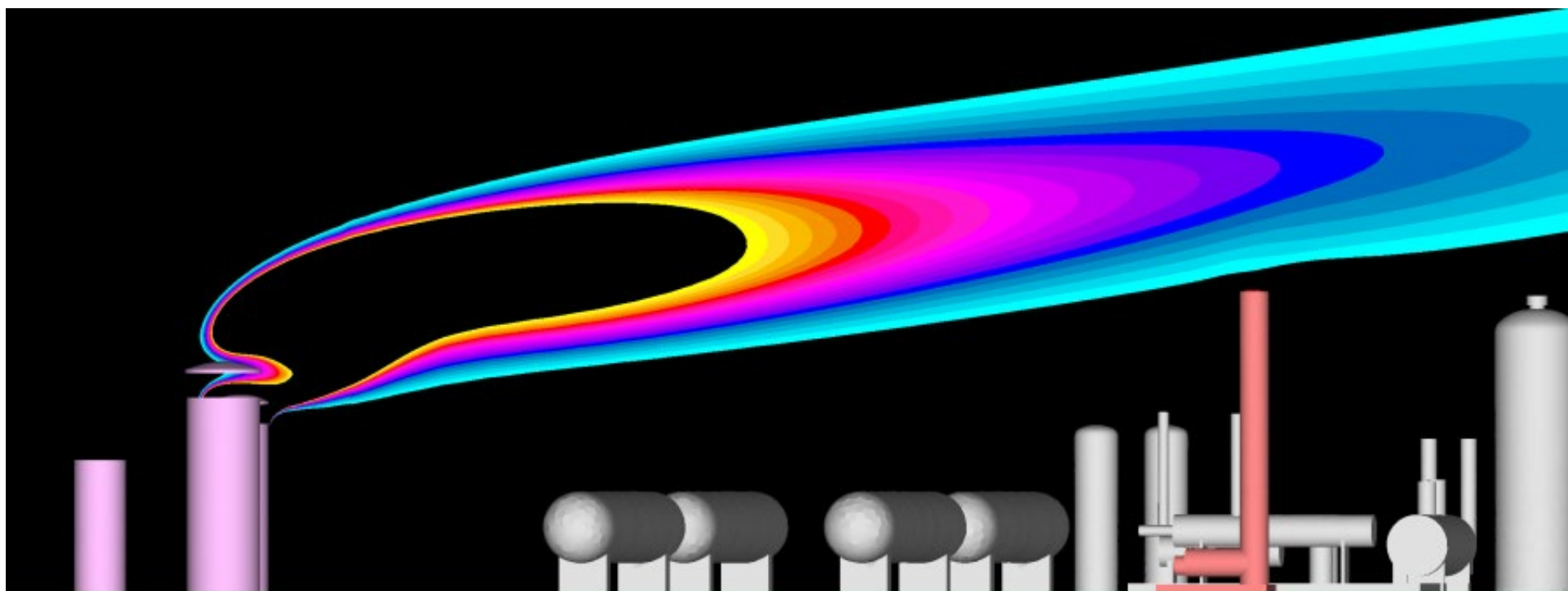
- Recommend operator implement proposed corrective actions regarding the high-high temperature alarms:
 - Determine why the High-High temperature alarm was not recognized in Gas Control prior to the fire.
 - Establish a work order/standard to test applicable dehydration unit SCADA data points/alarms at regular intervals during the withdrawal cycle/season.

2019 Incident – 478629

- Compressor station blowdown fire.
- Emergency Shut-Down of Plant 3 allowed gas plume to contact Plant 2 thermal oxidizer, igniting.
- Operator identified fire and activated ESD for Plants 1 and 2, adding additional fuel to the fire at the blowdown silencers.



2019 Incident – 478629 Cont.



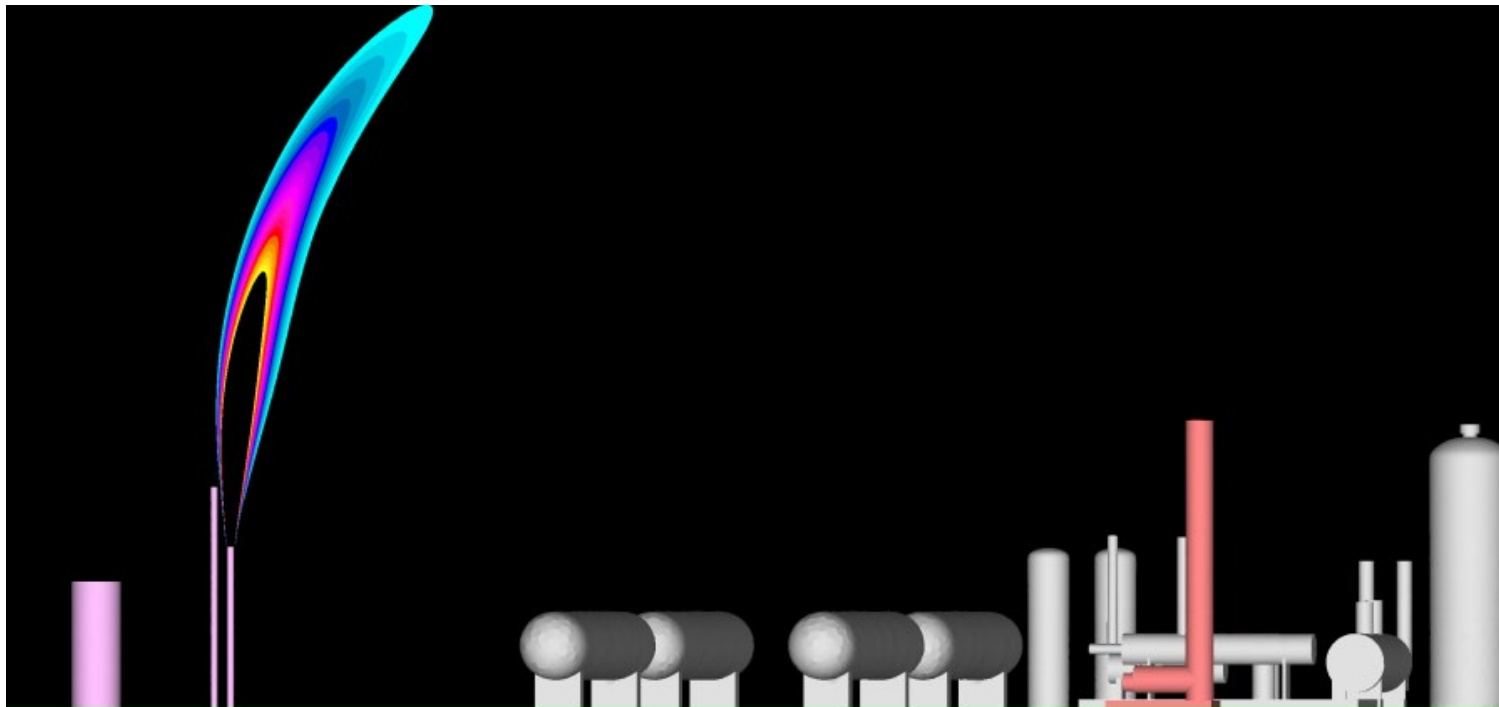
2019 Incident – 478629 Cont.

- Cause of initial Plant 3 ESD: Grounding issue interfering with the communication system.
 - Solution: Move the grounding systems further apart.



2019 Incident – 478629 Cont.

- Cause of ignition: Low velocity of gas discharge from blowdown silencer in conjunction with a close proximity to the thermal oxidizer.
 - Solution: Remove the silencers and install straight pipe blowdowns.

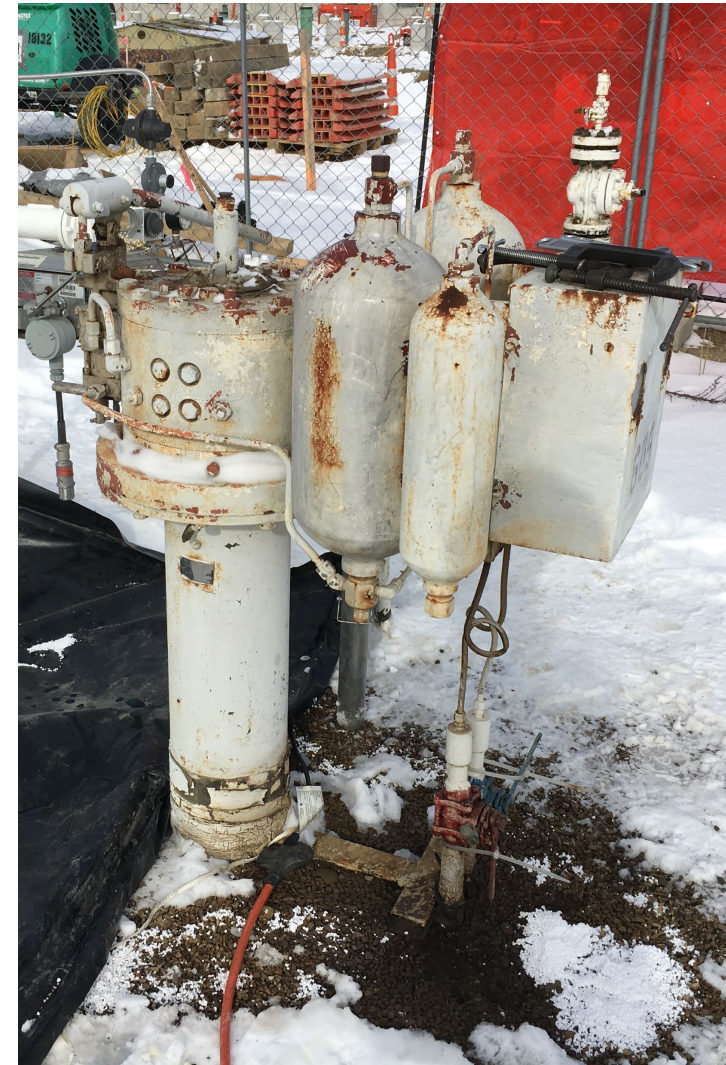


2019 Incident – 477834

- Pilot gas system malfunction causes Compressor Emergency Shut-Down.
- Catalytic heater failed, allowing regulator on pilot gas system to freeze.
- Presence of slow leaks on pilot gas system caused pressure drop, simulating activation of ESD system, causing operation of blowdown valves.
- In attempting to restore facility, a blowdown valve stuck and could not be closed by the responding Technician.

2019 Incident – 477834 Cont.

- Technician pulled ESD to stop gas flow, and one of the isolation valves failed to close.
- Gas loss of 32.5 MMcf.
- Recommend operator repair leaks on the pilot gas system to eliminate gas loss leading to false activation of the ESD system.
- Recommend operator repair catalytic heaters or replace with equipment better-suited for the operating conditions.



2019 Incident – 3484

- Transmission line leak.
- Leak located at creek crossing under 6' of water.
- External corrosion leak located under concrete swamp weight. Coating damage and disbondment.
- 16" Line installed in 1968.
- OP 495 psig. MAOP 913 psig.
- 2.186 Mmcf gas loss.



2019 Incident – 3484 Cont.



Questions?