

March 2026

Environmental, Safety & Security Sequential Safety Meeting



ANACORTES REFINERY

ESS Safety Metrics



DSA Eligible	OSHA rec	ORIR	AFPM 1a/1p	H2S >50 ppm	PSE 1/2	DEI 3/4
	1	0.79	0/0	0	2/1	0/0
	-	0.30	3	≤3	≤3	≤1

•**ORIR:** OSHA Recordable Injury

•**Anacortes**

1 - Chipped Tooth

•**AFPM 1a: Actual Incident** - serious injury that caused a fatality, hospitalization, or other life-altering event.

•**AFPM 1p: Potential Incident** - an incident with the potential for fatality, hospitalization, or other life-altering event, including near misses.

•**Anacortes**

•**PSE:** Process Safety Event, refer to R-12-007

•**DEI:** Designated Environmental Incident, refer to R-13-027



WORKING IN AREAS WITH LIMITED MOBILITY

There is no formal guidance on working in areas where conditions create limited mobility. Because of this, it is important to make extra considerations when performing a JSA and JJSV.

Recognizing how temporary conditions change risk factors is vital to ensure proper risk mitigation.

There are many things that may restrict mobility such as:

- Scaffolding
- Temporary Equipment
- Staged materials
- Adjacent active work
- Existing piping and equipment

Recognizing a work area with limited mobility

A work area should be considered to have limited mobility when:

- Movement is restricted
- Normal walking paths are obstructed
- Body positioning is forced or awkward
- Overhead or side clearances are reduced

These conditions create a much higher risk of impact injuries, trips, burns from hot equipment, and strains/sprains.

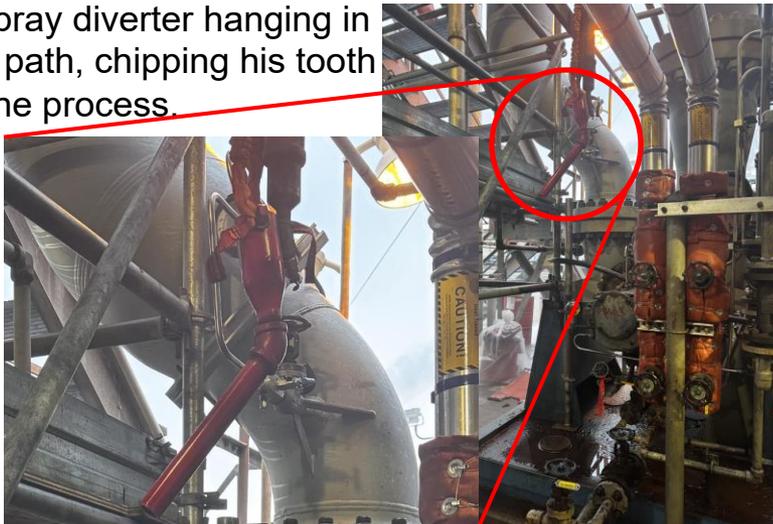


Incident examples

Mechanic sustains chipped tooth during maintenance

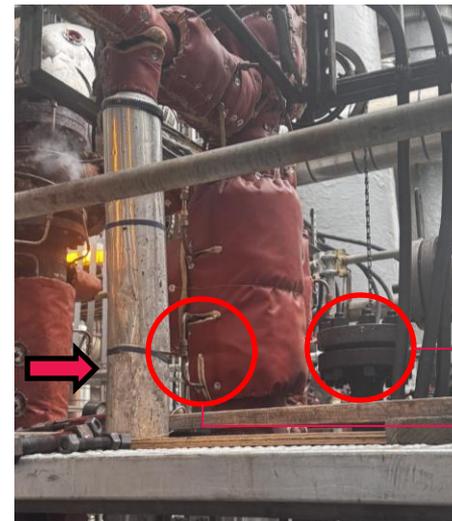
Feb. 10, 2025

While installing a gage and tubing above P-5503, a worker was moving over the pump tray and contacting a spray diverter hanging in the path, chipping his tooth in the process.



Business partner burns face on steam trace
Oct. 20, 2025

While unbolting PSV-5505, a business partner squeezed between two pipes to reach a flange.



While leaning in, the worker was unaware of steam tracing on the pipe and received a burn to the left side of their face.

Flange
Steam tracing

JSA/JJSV Focus Areas regarding tight work conditions

- Identify Access Routes
 - How are workers entering/exiting?
 - What hazards exist if an alternate path is required?
- Consider Temporary Conditions
 - Will scaffolding exist that inhibits work?
 - Will staged equipment prevent access to work site?
 - Will other teams be in the area at the time of work?



- Evaluate Body Position
 - Is bending, crawling, or climbing required?
 - Will this position bring workers close to hazards? (high temp, sharp, impact, etc)
 - Will this position cause additional strain?
- Scan for Strike Hazards
 - Can hanging obstructions be moved?
 - Are there overhead or side protrusions?
 - Trip hazards?

It is impossible to predict every incident possibility but asking appropriate questions can prevent injury

Start Safe and Stay Safe: Fall Protection



R-11-033 Update Summary

Section Number/Title	Section Number/Title
3.0 - Definitions	7.0 – Rescue
4.1 - Employees	10.4 – Warning Line System
4.5 - Contractors	10.5 – Safety Monitoring System
5.0 - Requirements	11.0 – Fall Arrest Systems
5.1 – Fall Protection Plan Requirements	11.2 – Personal Fall Arrest Systems (PFAS) Equipment and Components
6.1 – Aerial Work Platforms	12.0 – Removing Grating, Platforms, Structural Steel, Handrails and other Components Creating Fall Hazards
6.4 Work Performed in Pipe Racks	12.1 – Grating, Platform etc. Removal/Opening Control Procedure
6.5 – Rope Access Work	12.2 – Continuous Work Exception – Red Barricade Use
6.6 – Rope Access – Confined Spaces	15/16 – Updated Removal Form F01

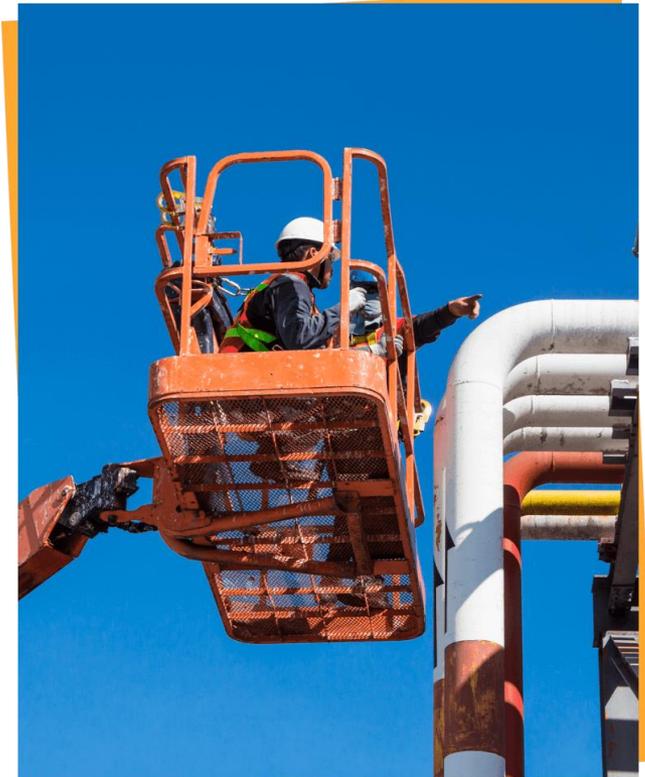
		REFINERY-WIDE		R-11-033
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RESPONSIBLE DEPT. HES&S	CONTENT CUSTODIAN David Levine	APPROVED BY Andrew Johnson	LEGACY NUMBER: SR-62	
REVISION APPROVAL DATE: 06/17/2025		NEXT REVIEW DATE: 06/17/2030	MOC: N	REVISION: 3

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R-11-033 Update Summary

6.1 Aerial Work Platforms	Rewrote section to require Class 2 SRL-Ps as standard; clarified transfer and 100% tie-off requirements; added JJSV and JHA documentation; specified approved anchorage locations.
6.4 Work Performed in Piperacks	Created standalone section applying to all crafts. Added guidance for anchor verification, hot surface avoidance, and rescue/egress planning.



R-11-033 Update Summary

6.5 Rope Access Work

Clarified when rope access is allowed; added requirements for SPRAT/IRATA certification, MPC Safety involvement for complex/high-risk work, and cross-reference to pipe rack section.

6.6 Rope Access – Confined Spaces

Condensed repeated permit language; clarified coordination among departments; required combined review of Rope Access Plan and CSE Permit.



Fall Protection (R-11-033) Updates

3M DBI-SALA Nano-Lok edge Tie-Back Personal SRL

11.0 Fall Arrest Systems

Reorganized and clarified flow; added PFAS definition and training requirements; included explicit ANSI/OSHA compliance statement. Clarified Class 2 SRL-Ps as the standard equipment to reduce equipment selection errors.



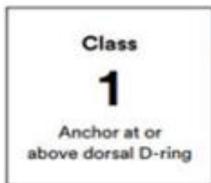
Start Safe and Stay Safe: Fall Protection



Self-Retracting Device Classes

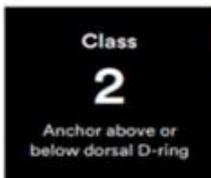
Self-Retracting Device Classes

Effective August 1, 2023, Class A and B designations have been redefined as Class 1 and Class 2 designations.



Class 1

- For use with anchorages AT or ABOVE the dorsal D-ring.
- Subject to a maximum free fall of 2 feet.



Class 2

- For use with anchorages ABOVE or BELOW the dorsal D-ring.
- Can be used when overhead anchorage is not feasible.
- Subject to a maximum free fall of 6 feet.
- Must be edge rated.



Business Partner Equipment Compliance Date 06/01/2026

Start Safe and Stay Safe: Fall Protection



R-11-033 Update Summary

12.0 Grating, Platform, Structural Steel, Handrail & Equipment Removal

15.0 and 16.0 Grating Removal Form (F01)

Revised to include new criteria for openings and removals that create fall hazards. Added allowance for red barricades under specific continuous work conditions as defined in Section 12.2.

Marathon Petroleum Company

Grating Removal Form (R-11-033-F01)

(Grating, Platform, Structural Steel, Handrail & Equipment Removal/Opening Control)

This form and the listed requirements must be completed prior to removing any structural components or equipment that creates a fall hazard (ex. section of guardrail, platforms, grating, structural steel, pumps, compressors etc.).
Top copy of this form must remain with Owning Department for tracking and retention.
Carbon Copy to be affixed at the job site for the duration of the project with the Safe Work Permit.

Description of Zone/Area and Equipment of removal: _____

Date Grating/Handrail/Structural Steel etc. will be removed: _____

Type of removal to be done (Circle Selection):
 Grating / Platform / Handrail / Structural Steel / Equipment / Other _____

Hard Barricade Requirements	Red Barricade Requirements (Continuous Work Exception per Section 12.1)
<input type="checkbox"/> Rigid barricade installed 100% around opening <input type="checkbox"/> Warning/danger signs posted <input type="checkbox"/> If job is paused/unattended - load-rated cover marked 'HOLE' or 'COVER' secured in place	<input type="checkbox"/> Job is continuously worked and full rigid barricade not practical <input type="checkbox"/> Red barricade with danger tags installed around hazard <input type="checkbox"/> Work area remains under span of control of servicing crew <input type="checkbox"/> Fall protection systems (e.g., PFAS, fall restraint) in place and verified

Are all affected employees in the hazard zone trained in fall hazard recognition and using proper fall protection PPE?
 Have all affected employees completed a JSA, Joint Jobsite Visit and have supervisor approval?
 Was the Area Safety Representative notified of the component removal and mitigation steps in place? Who? _____

Component Removal Work Authorization

Authorized Employee (Craft conducting the work): _____ Date: _____

Unit Operator: _____ Date: _____

Area Supervisor (Operations Supervisor): _____ Date: _____

Maintenance / Project Coordinator: _____ Date: _____

Mech/Structural Engineering (Structural Steel Removal Only): _____ Date: _____

Component Installation/Return to Service Authorization

Post JJSV: Have all components been reinstalled and the **TIER 1 Grating and Platform Checklist** completed on the back of F01? Yes N/A

Authorized Employee (Craft conducting the work): _____ Date: _____

Unit Operator: _____ Date: _____

Area Supervisor (Operations Supervisor): _____ Date: _____

Mech/Structural Engineering (Structural Steel Removal Only): _____ Date: _____

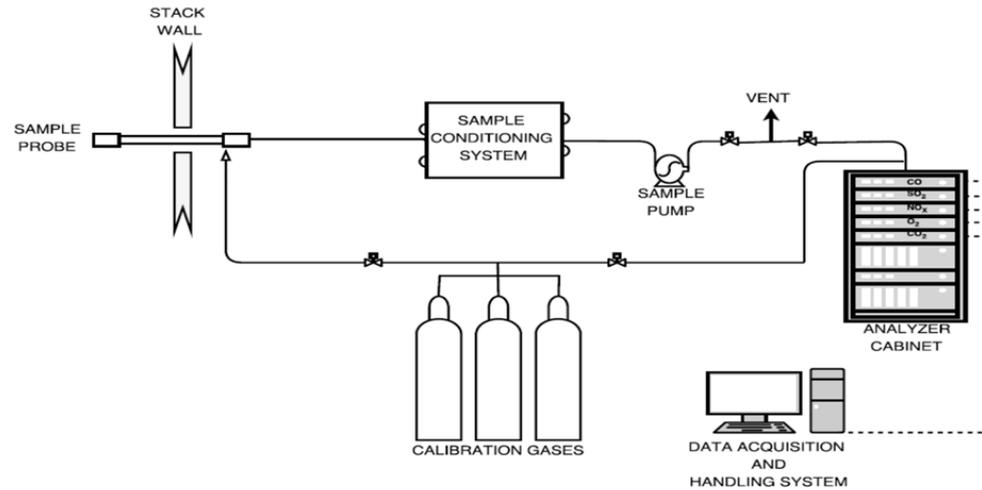
After all components and equipment have been reinstalled and the work is complete, submit the finalized Grating Removal Form (Top and Carbon copies) to the Safety Department for recordkeeping.

Environmental Topic - CEMS



What is a CEMS and why is it important?

A CEMS is a Continuous Emissions Monitoring System that is installed on refinery equipment that provides real time data on refinery emission sources.



What equipment has a CEMS?



The refinery has CEMS analyzers at these locations:

- Flare – Total sulfur, H₂S, BTU
- Flue Gas Scrubber – SO₂, CO, NO_x
- Fuel gas system – H₂S
- Furnaces – F-101, F-753, F-6602 - NO_x
- Truck rack - VOC
- Ambient air monitor near the TERA building – SO₂

How is the CEMS data used?

- Instantaneous readings are used to manage and comply with short-term and long-term permit limits
- Example: 3-hour H₂S limits on the flare and fuel gas
- Example: 365-day NO_x limit on the flue gas scrubber
- Annual emissions reporting

CEMS Operating Requirements



CEMS data is critical for environmental compliance. Therefore, there are strict operating requirements:

- Daily validations
- Quarterly calibration gas audits
- Annual accuracy tests
- Strict uptime requirements
- Must collect valid data at least 90% of the month (Washington State regulation)
- Must collect valid data at least 96% of the semi-annual period (Internal Marathon standard)

Recent CEMS Issue



In early January, the Flare Total Sulfur CEMS began failing daily validations for an unknown reason

- I&E did a great job troubleshooting as much as they could, but couldn't determine the cause
- Vendor flew in to further troubleshoot and still couldn't resolve the issue
- Environmental contacted a local CEMS vendor to rent a temporary CEMS due to the amount of downtime that had accrued
- I&E was able to resolve after a complete rebuild and a software upgrade

Huge thank you to I&E for tirelessly working on this until it was resolved!

PSE1 MPC PROCESS SAFETY ADVISORY

GARYVILLE TANK 150-11 FAILURE INC #393860

PSA 26-02

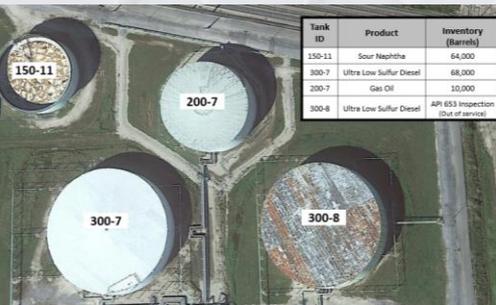
Published 2/10/2026

On August 24, 2023, at approximately 18:35, an Operator detected a leak on Tank 150-11 in sour naphtha service between the inlet/outlet nozzles and the nearest manway. The Emergency Response Team (ERT) was activated to foam the dike and suppress the vapors while tank farm operations personnel worked on de-inventorying the tank. At approximately 06:31, on the morning of August 25, 2023, the hydrocarbon and vapors contained in the Tank 150-11 dike found an ignition source and ignited. The fire spread to Tank 300-7 in ULSD service, and both tanks were severely damaged by the fire. The fire continued to spread causing collateral damage to two other tanks. The ERT had completely extinguished the fire and hot spots on Monday, August 28, 2023.

- The incident was categorized as a Tier 1 Process Safety Event (PSE1) due to direct fire damage exceeding \$100,000.

Causal Factors:

- Low pH in Tank 150-11 water bottoms (Average pH of 4.4 since January 2022)
- Failure of tank floor - Coating application error during installation
- Failure of internal water draw piping - Prevented the removal of low pH water bottoms
- Ignition source - Electrical arcing from conductive foam solution entering open elbow conduit with energized wiring



Tanks Prior to Incident

Tank ID	Product	Inventory (Barrels)
150-11	Sour Naphtha	64,000
300-7	Ultra Low Sulfur Diesel	68,000
200-7	Gas Oil	10,000
300-8	Ultra Low Sulfur Diesel	API 653 Inspection (Out of service)



Tanks Post-Incident



Tank 150-11 Post Incident

REST OF THE STORY: On Thursday, August 24, 2023, at 18:35, a tank farm Operator detected and witnessed a leak on Tk 150-11 (sour naphtha), between the inlet and outlet nozzles and the nearest manway. Soon after, tank farm operations start to de-inventory the tank by various means throughout the night. They started with 67,770 bbl. (23.18') of sour naphtha material and finished with 21,432 bbl. (7.33') at the time of ignition. Emergency Response Team (ERT) staged equipment and completely foamed the pool of liquid in the tank dike by 19:52. The foam blanket was maintained throughout the night. On Friday, August 25, 2023, at 06:31, the hydrocarbon vapors in the Tk 150-11 dike ignited with a flash in the southwest corner of the dike. The ERT became actively involved in fighting the fires with water and foam. At approx. 07:18-07:51, foam, water, and hydrocarbon overflowed the intermediate dikes between Tk 150-11 and Tk's 300-7 (ULSD) and 200-7 (Gas Oil), spreading the fire to these tank dikes. At approx. 08:45, both Tk 150-11 and Tk 300-7 became fully involved and engulfed in flames. On the night shift, Tk 200-7 received collateral damage (failed frangible joint) due to prolonged exposure to fire and heat. During the early morning hours on Saturday, August 26, 2023, a large flare-up event took place, and Tk 300-8 (an out-of-service ULSD tank) received collateral damage (a failed frangible joint) due to material entering the tank through an open manway and catching on fire. On Sunday, August 27, 2023, ERT personnel continued to fight fires/flare-ups as they popped up and quenched known hot spots as determined by IR camera images taken via drone. The fire and hot spots were finally extinguished/quenched on Monday, August 28, 2023.

Post Fire Investigation:

- 1.) The open elbow conduit was the most likely source of the ignition based on the carbon residue inside the elbow and melted copper wires that showed signs of arcing.
- 2.) Coating in area of leak failed due to exposure to acidic water or improper metal preparation and/or coating installation in 2011. This allowed acidic water (pH on average of 4.4) to access the carbon steel floor plate. Carbon steel floor plate failed catastrophically due to acidic water corrosion. The acidic water was generated from the sour naphtha material being treated with a water soluble H2S scavenger at a point of off-site origin that had a starting pH range of 2.0-3.5. Testing and evaluations on the remaining coating appear to show the coating to be in good condition on the rest of the tank floor.
- 3.) It should also be noted that one of the internal water draw piping nozzles on the tank (designed to remove any water collection on the tank floor) had holes in the piping not allowing an effective and efficient way of removing the tank water bottoms. Plans are to redesign the internal water draw piping to increase its reliability. The GVL site was following all corporate and local procedures/policies for managing the tank water bottoms for pH and microbiological activity.

DISCUSSION TOPICS:

- Fire Fighting Foam: During the incident, the fire fighting foam did not appear to perform as anticipated or expected. A team was developed to investigate the foam further.
 - Fluorine Free firefighting foams are very different then legacy foams and must be applied as such.
 - Corporate refining has provided Tank Fire and Fire Foam training to responders. This will ensure proper strategies and tactics are understood as the transition to fluorine-free foams takes place.
- When completing a Management of Change, what discussions take place on the impact outside the refinery if material has potential to ship offsite? Consider the entire downstream system (tanks, piping, etc.). How will a change at your facility potentially impact other sites?
 - MPC has discontinued the use of low-pH H2S scavenger and removed from the approved additive list.
- Consider creating a pre-plan document for each tank dike to identify, manage, and mitigate the energized electrical circuits within a tank dike during LOPC events.

Global Action

Recommendations	Assigned to:	Due Date:
Review this advisory with your leadership team, and cascade to your entire organization to ensure site-wide review to improve process safety hazard recognition.	Site VPs	5/31/2026
Update SP-80-21 to address the findings from the ESI report and to require an independent 3rd Party inspector to monitor the installation of all tank coatings/liners.	Larry Curry (Rec # 350192)	Complete
Develop a core specification governing the selection of internal coating/liner systems for refinery application services. Include coatings/liner systems that are suitable for low pH environments within storage tanks.	Larry Curry (Rec # 350200)	Complete
Modify RSP-1506-010 (Tank Microbial Management Standard Practice) to provide guidance on how to respond, manage, and mitigate low pH in tank water bottoms including potential flushing, testing, and source identification.	Brad Martin (Rec # 350149)	Complete

Learning Team

2025 H2S Exposure Incidents on Minor Tasks

Dates of the Meeting(s): November 12/13, 2025



Purpose

The Scope:

Discover how work where H2S exposure is likely (sampling equipment preparation, etc.) gets done, the context surrounding it, and what obstacles are encountered.

The Goal:

- Discover conditions that led to ROSE personnel H2S exposure while depressuring the J5700 compressor after shutting it down (Intelex 499896) and isolating it, along with other exposures in 2025 on minor tasks.
- The goal is to strengthen/improve what is working and identify improvements to prevent H2S exposures.



Team Members

- Facilitator – Glen Slick
- Scribe – Bret Fritch
- Sponsors – Joe Stivala/Ivan Kravtsov
- SME's – Trent Kies(Safety)/Michael Fazio(IH)
- Operations – Ryan Bowker
- Operations – Mike Lankford
- Operations – Michael Gregory



Learning Team Process

Day 1

- Team participated in 4 hour round table event
- Discussion/Review of 2025 H2S Exposure Incidents related to minor tasks
- Day 1 goal was to “learn”, what needs improvement, process, and challenges

Day 2

- Team resumed round table discussion after overnight “soak-time”
- Day 2 goal focused on specific problems and solutions
- SMEs brought in to discuss additional details and answer questions



Problem Statements Overview

- Lack of training in regard to APR use
- Sample Stations not properly maintained or standardized causing Operators to get H2S exposures
- Lack of proper vent/draining pipework for equipment preparation /blowdowns that leads to H2S



Problem Statement #1 – Lack of training in regard to APR use

Issues & Concerns

- Training on half face/full face APR's, acid gas/multi gas and when to use.
- Confusion on proper cartridges to use with full face versus half face respirator and how to obtain proper cartridges.
- Lack of knowledge from Supervisors down.
- More effective training specific to APR's, cartridges, usage.
- APR's not readily accessible in all units.
- Too many variables using APR's. Not pressurized correct cartridges.

Recommendation(s)

- Review and update local APR usage policy to align with corporate APR policy. Andrew Johnson 5/18/2026
- Develop face-to-face specific training in regard to Air Purifying Respirators, correct cartridges, and H2S exposure. Mike Fazio 6/18/2026
- Safety professionals to deliver training during Safety Sequential meetings. Jeff Wood/David Levine/Daniel Savella/Trent Kies 8/17/26
- Evaluate strategically staging APR's and associated equipment out in units where H2S is a concern. Need to ensure cartridges are managed (i.e. frequency of replacement). Joel Wiggins/Matt Taylor/Jeno Martin/Ben Smith/Kris Smith 8/17/26



Problem Statement #2 –
Sample Stations not properly maintained or standardized
causing Operators to get H2S exposures

Issues & Concerns

- Sample stations need deviations done to take proper samples, need for proper maintenance.
- Sample stations only have instructions of minimum protection, nothing about respiratory protections.

Recommendation

- Evaluate sample stations in high H2S service preventative maintenance (PM) scope and frequency. Include maintenance and operation tasks/rounds and train affected employees as needed. Alex Zelepukin 8/17/2026
- Post H2S warning/poster at sample stations in high H2S service. Rob Miller/Randy Boucher 5/18/2026



Problem Statement #3 –

Lack of proper vent/drainage pipework for equipment preparation/blowdowns that leads to H2S exposures

Issues & Concerns

- Decon to sewers due to lack of maintenance drop out, even with temp pipes, union leaks.
- Equipment line-ups where H2S can go to sewer or atmosphere.

Recommendation

- Build more B-Zone MDO's . B-Zone MDO project number AN.24071 references this learning team
- Audit all Operator routine tasks where draining would cause an H2S exposure concern and develop a mitigation plan. Joel Wiggins/Jeno Martin/Kris Smith – 5/18/26



Bring It Up!!!



If there are Safety questions or concerns you wish to discuss, please bring them up!