

February 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	Permit deviations
	0	0.00	0/0	0	0/0	0/0	0
	-	0.30	3	≤3	≤3	≤1	TBD

- **ORIR:** OSHA Recordable Injury
- **Anacortes**

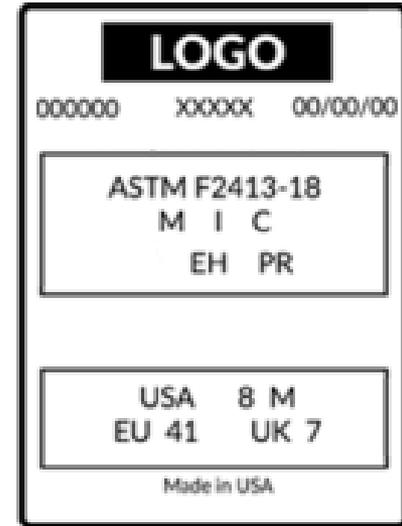
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- **PSE:** Process Safety Event, refer to R-12-007
 - **DEI:** Designated Environmental Incident, refer to R-13-027

- **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**

All footwear must be in compliance with OSHA Standard 29 CFR 1910.136.
This applies to all work in process areas, maintenance areas, lab, and warehouse.

Check the tag on the footwear. It must have the following information:

- ASTM Standard (ex. ASTM F2413)
- I (Impact protection)
- C (Compression protection)
- EH (Electrical hazard) or SD (Static Discharge)
- PR (Puncture resistant)
 - A PR insole may be used if the tag does not have a PR rating



Additionally, footwear must have a defined ¼” heel, slip resistant soles, and cover the ankle. Slip on footwear are authorized as long as they meet the above requirements.

All employees are required to ensure their Footwear is in compliance by **MARCH 31**.





Start Safe and Stay Safe: Safety Highlights



This month the 'chirp function' was programmed into the Tango monitors. This is an engineering control that should serve as an effective reminder to calibrate our tango monitors every month as required by RSP-1701.

If you are planning to be out on vacation, please make sure that the monitor is accessible so it can be docked. Battery usage will be affected as well.

THINGS TO REMEMBER REGARDING H2S MONITORS:

- H2S monitors are required whenever you enter a process area
- If you dock your monitor, wait for it to finish before entering a process area
- Monitors must be docked every 30 days **AT A MINIMUM**
- Your H2S monitor may be the only thing warning you of a potentially life threatening atmosphere



When working with airborne hazards, respiratory protection shall be set based on the PEL of the particular airborne hazard.

Attachment 1 of the Respiratory Protection Program document (R-14-008) outlines which respiratory protection is appropriate for a given hazard. Some examples from the chart are below.

Respirator Selection

Type of Hazard	Degree of Anticipated Hazard or Situation of Use	Respirator to be Used (terms defined at end of table)
Ammonia	Sampling, blinding	Full-face with lime green or olive drab cartridges
Hydrocarbons (< 0.1% Benzene)	Moderate leak of volatile hydrocarbon, or air concentration of <1000 ppm	Half-mask or full-face with organic vapor cartridge
	Air concentration <5000 ppm	Full-face with organic vapor cartridge, or Airline
	Tank or vessel entry before it has been cleaned of hydrocarbons, or air concentration greater than 5000 ppm	SCBA or Airline with escape bottle
Hydrogen Sulfide	Air concentration from 0-9 ppm	None
	Air concentration from 10-49 ppm	Supplied Air, APR if approved
	Air concentration from >50 ppm	Supplied Air
Unknown Atmosphere	Entry into confined space or other anticipated hazardous atmosphere where hazard level is unknown	SCBA or airline with escape bottle



[R-14-008](#)

What is an Open Ended Line (OEL) ?



	<p>OPEN VALVE</p> <p>CLOSED VALVE</p>	<p>OPEN TO ATMOSPHERE OR OPEN DRAIN</p>	OEL
	<p>CLOSED VALVE</p> <p>OPEN VALVE</p>	<p>OPEN TO ATMOSPHERE OR OPEN DRAIN</p>	OEL
	<p>CLOSED VALVE</p>	<p>OPEN TO ATMOSPHERE OR OPEN DRAIN</p>	OEL
	<p>CLOSED VALVE</p> <p>CLOSED VALVE</p>	<p>OPEN TO ATMOSPHERE OR OPEN DRAIN</p>	NOT OEL
	<p>CLOSED VALVE</p> <p>CAP/PLUG/ BLIND FLANGE</p>		NOT OEL
	<p>OPEN VALVE</p> <p>CAP/PLUG/ BLIND FLANGE</p>		NOT OEL
	<p>OPEN VALVE</p> <p>PI</p>	<p>PRESSURE GAUGE OR OTHER INSTRUMENTATION</p>	NOT OEL
	<p>OPEN VALVE</p> <p>PLUG</p>		NOT OEL

Open-ended valve or line means any valve, except safety relief valves, having one side of the valve seat in contact with hydrocarbon process fluid and one side open to the atmosphere.

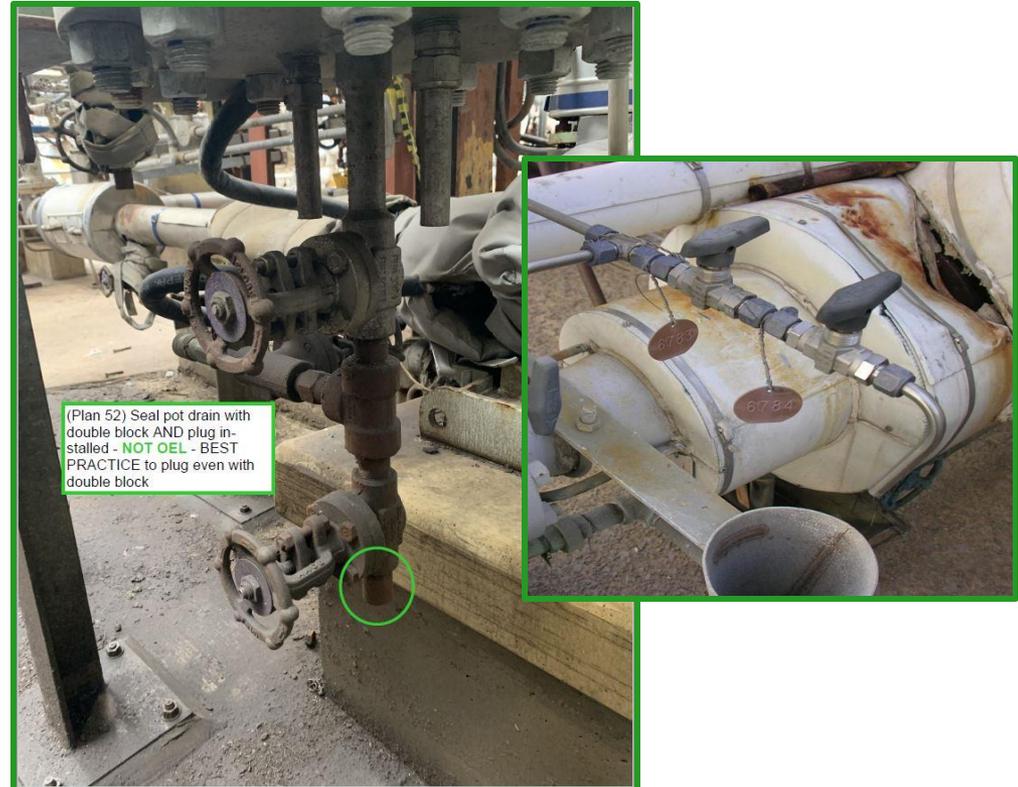


Process fluid

§ 60.482-6a Standards: Open-ended valves or lines.



- Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve
- The cap, blind flange, plug, or second valve shall seal the open end at all times except when operations require the valve to be opened, such as draining or venting. **The cap, blind, or plug should be replaced, or the 2nd valve closed immediately afterward.**
- Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed. **Ensure no process fluid is trapped between the two valves.**



Your Part in This!



- Please Keep A Watchful Eye!!
- If you find an OEL, fix it!
 - OEL's discovered by operations in the field should be immediately corrected.
 - EVERY OEL discovered by an auditor is an environmental deviation. This includes agencies, internal auditors, & LDAR business partners.



Can you find the OELs?



Can you find the OELs?



Needs Cap



Only one isolation point – these are all OELs



Needs to be closed or 2nd block valve added

PSE₁ MPC PROCESS SAFETY ADVISORY

ROBINSON REFINERY PENEX FLARE LINE LEAK INC # 435493

Published
1/28/2026

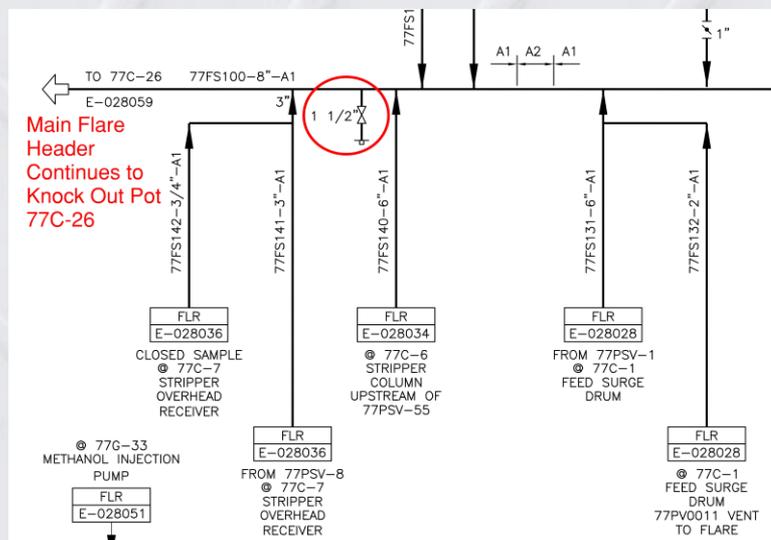
PSA 26-01

On July 6, 2024, a leak developed on the flare line of the refinery's Penex Unit at the location of a nominal pipe size (NPS) 1 1/2" low point bleeder.

➤ **This incident was categorized as a PSE 1 due to the release of greater than 1,100 lbs./hour of a flammable vapor.**

Causal Factors:

- Hydrogen Chloride (HCl) carryover to the flare system combined with water resulting in acidic conditions leading to corrosion and failure of a low point bleeder.
- A radiograph inspection taken in 2016 incorrectly listed the piping as "schedule 40" and not the actual installed schedule 80, resulting in a false reduced corrosion rate.



“THE REST OF THE STORY”: The Robinson Penex is an isomerization unit that utilizes chlorides to facilitate the reaction process. The chlorides are primarily removed via the Stabilizer Overhead System. In 2008, a new sample station was installed on the off-gas stream. Venting this station routinely sends small amounts of chlorides to the unit’s flare header. Process upsets and shutdowns involving PSV relief or reactor depressurization resulted in streams containing chlorides being flared. The piping configuration of the flare header includes a NPS 1 ½ low point bleeder upstream of the knockout drum that served as a location for chlorides to pool. Historically, the flare header was purged with nitrogen following a de-pressuring event, but liquid freeing low points was not a common practice.

On August 25, 2016, a radiograph inspection was taken on the low point bleeder and pipe nipple. The inspection showed a pipewall thickness of 0.151“, and this was assumed to be schedule 40 (0.145" wall thickness for NPS 1 ½” pipe). This resulted in zero wall loss from the nominal thickness. The next inspection interval was set for 10 years per API 570. The NPS 1 ½” piping was actually schedule 80 (0.200" wall thickness) when installed. This was discovered based on the original spec when the unit was built. The reading that was taken in 2016 was also backdated and entered as the 2006 reading resulting in zero corrosion rate from 2006 to 2016.



Similar PSAs to Review:
[PSA 16-04: Garyville NHT Line Rupture](#)
[PSA 25-04: Robinson OSBL Sat Gas Leak](#)

DISCUSSION TOPICS:

Operations:

- Are you aware of locations that potentially corrosive process fluid could pool in a flare header? Do you have steps to purge and clear low points after an event?
- For LOPCs involving flare piping, how would you respond? What steps could be taken to mitigate/minimize the release volume? Consider where the material goes when shutting down. Could a shutdown result in a larger release?

Engineering:

- How are low point bleeder locations reviewed during piping design? Can the total number be minimized?

Global Action

Recommendations	Assigned to:	Due Date:
<i>Review this advisory with your leadership team and cascade to your entire organization to ensure site-wide review to improve process safety hazard recognition</i>	Site VPs	3/31/2026
<i>Identify areas within flare systems susceptible to chloride carryover in Reformer and ISOM units.</i>	Technical Directors	7/31/2026
<i>Review Reformer and ISOM flare header, develop a list of low point bleeders that are not necessary to determine if it should be removed or added to the inspection program only. If low point bleeder can be removed, enter work order to remove. After work orders are entered, enter a rec action to verify that the work was completed during TAR.</i>	Operations Directors	1/31/2027
<i>Use data from Technical Directors to update inspection program to include all low point bleeders on the flare systems susceptible to chloride carryover in the Reformer and ISOM units.</i>	Maintenance Directors	1/31/2027



**Debutanizer Column PSV Leak By
November 30, 2025**

Intellex 503962

Category 2 Investigation

**Investigation Team: Chris Swenson/Tabitha
Kenneally**

Sponsor(s): Amber Larsen/Mike Shea



Incident Description

- On Sunday, November 30, 2025, at approximately 04:00 a.m., the Zone A Supervisor reported a strong, intermittent odor of sulfur and benzene in the area. Zone A supervision requested that Zones B and C inspect for potential leaks. All operators proceeded outside to investigate, but no leaks or abnormalities were identified during this initial inspection.
- Later that evening, during routine rounds, the Gas Recovery operator reported hearing a sound resembling an air leak near the Debutanizer column. The Zone B Supervisor requested that Zone C utilize the FLIR camera for further inspection, which indicated a potential issue at the top of the Debutanizer.
- The Zone B Supervisor directed the team to retrieve two self-contained breathing apparatuses (SCBAs) and a six-way meter to access the column and verify if pressure safety valve PSV-4463 was leaking. Operators in supplied air confirmed that PSV-4463 had experienced a catastrophic failure, resulting in a leak to the atmosphere. The operators isolated PSV-4463, and a work notification was issued for its repair. The Cat 2 investigation was started on Dec 1.

- The valve's spring was sent to a 3rd party lab on Dec. 3rd and the subsequent preliminary laboratory analysis came back on Dec 23.
 - It identified the root cause of the failure as sulfide stress corrosion cracking (SSC) in the valve's spring—a form of hydrogen embrittlement exacerbated by exposure to hydrogen sulfide (H₂S) environments.
- Key contributing factors include
 - Elevated material hardness
 - Presence of sulfur compounds,
 - The time of exposure of the spring to a sour environment

- Removal of protective rupture disc in May 2022. Management of Change (MOC) 107004 authorized the removal of 11 rupture discs from five columns across the refinery, including the one upstream of PSV-4463.
- The primary intent of MOC 107004 was to eliminate daily operational monitoring of these rupture discs.
- PSV metal seated design is not intended to be “bubble tight” and allowed some H₂S of adequate quantity to leak-by and corrode the spring over time. NOTE: There are similar design PSV’s elsewhere with much larger H₂S concentrations that have not shown any signs of sulfide stress corrosion.
- Prior to MOC 107004 , a 2021 inspection showed moderate pitting on the spring and likely signs of sulfide stress corrosion.

- The MOC team relied on a previous version of the environmental checklist, which failed to identify relevant regulatory considerations.
- PSV-4463 is in vapor service and subject to equipment leak standards and MACT standards (Maximum Achievable Control Technology) that require the PSV to operate with no detectable emissions; the rupture disc is an important form of mitigation to prevent leak by to the environment.
 - ✓ Discussions with the Environmental Department confirmed that this aspect was not adequately addressed in the MOC What-If analysis.
 - ✓ The environmental checklist has since been updated to the corporate environmental checklist; similar scenarios will be properly identified in future MOCs.
 - ✓ Environmental representatives have taken a more active role in the MOC hazard analysis process by requesting to be invited to every analysis.

Investigation Recommendations/Opportunities for Improvement



Category 2: HES director to add quarterly key MOC first party audit findings to monthly HES meetings	07/01/2026	Amber Larsen
Category 2: Evaluate PSV's in highly corrosive service	09/30/2026	John Acord
Evaluate plant wide adoption of instrumentation to detect rupture disc failure	12/15/2026	Jacob Klostermeier
Evaluate the need to install rupture discs on PSV's in HAP service	07/01/2026	Frances Graham
Evaluate reinstalling the 11 rupture discs removed by MOC 107004	07/01/2026	Amber Larsen
Category 2: Site SME to work with technologist to address SCC concerns	12/15/2026	David Rudd
Create MOC to install rupture discs in HAP service per list	12/15/2026	Kyle Cassidy
Category 2: Evaluate installation of wireless acoustic monitoring on all atmospheric relief devices in hydroca...	12/15/2026	Jacob Klostermeier
Update the MACT PSV NOCS	12/15/2026	Frances Graham

Bring It Up!!!



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