Title: **Standard Meter Station High H2S Auto Isolation and Purge Procedure**	*Procedure Number:*	**SOP-M-300**
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Purpose

The purpose of this procedure is to prevent off-spec gas from entering the Canadian Gas Transmission mainline from any standard single isolation valve receipt meter station. In the event of a high H2S alarm, the steps below will allow Gas Control the ability to monitor all necessary data while remotely operating the meter station isolation valve(s), and minimize meter station downtime.

Trigger

- An H2S analyzer reading greater than 4 ppm at the meter station will initiate an H2S high alarm in SCADA.
- An H2S analyzer reading greater than 6 ppm at the meter station will initiate an H2S high-high alarm in SCADA and automatically close the meter station isolation valve.

Resources Required

- Facility Operator
- Gas Control
- T-North On-call Supervisor
- Measurement Technician
- Measurement Technical Services

Output

The meter station is returned to normal operating conditions once on-spec gas (less than 4 ppm of H2S) is detected by the meter station H2S analyzer.

Procedure Steps

Step	*Role*	*Procedure Step*
1	Gas Control	If an H2S analyzer reading is greater than 4 ppm at the meter station, a high alarm will be initiated in SCADA. Gas Control will assess the situation and contact the Facility Operator to investigate further.

2	Gas Control, Facility Operator	If an H2S analyzer reading exceeds 4 ppm (but less than 6 ppm) without showing a downward trend for 15 minutes, Gas Control will remotely close the isolation valve. If an H2S analyzer reading exceeds 6 ppm, the isolation valve will automatically close immediately. The Facility Operator must contact Gas Control by calling 403-699-1701.
3	Facility Operator, Gas Control	When ready, the Facility Operator sweeps the off-spec gas through the return fuel line and the sales line back to the facility while monitoring the H2S content at the producer facility (via the facility analyzer or manual Draeger). Gas Control will also monitor the H2S reading at the meter station.
4	Facility Operator, Gas Control	Once the off-spec gas has been cleared out of the sales line, the Facility Operator must then confirm the H2S content is within spec by taking a manual Draeger H2S reading at the facility outlet. The Facility Operator must contact Gas Control to ensure the manual Draeger H2S reading is in line with the meter station's H2S analyzer reading. Once the H2S readings have been verified, the Facility Operator will request Gas Control to open the isolation valve.
5	Gas Control	Gas Control will prepare to issue a valve open command to open the isolation valve by confirming the following conditions have been met: a. The manual Draeger H2S reading reported by the Facility Operator is less than 4 ppm. b. The meter station's H2S analyzer reading is less than 4 ppm. c. The differential pressure across the isolation valve (sales meter pressure versus return meter pressure) is less than 10 psi.
6	Gas Control	If all of the above conditions have been met, Gas Control will record a "V" (Victor) number, initiate the isolation valve open command and ensure the isolation valve has reached the open position.
7	Gas Control, Facility Operator	Gas Control will confirm the isolation valve has reached the fully open position and verify with the Facility Operator that the meter station is back to normal operating conditions.

8	Gas Control, T-North On-call Supervisor, Measurement Technician	If attempts to open the isolation valve fails in any way, Gas Control will contact the T-North On-call Supervisor to dispatch a Measurement Technician to site to manually open the isolation valve once conditions allow.
For Dual H2S Analyzer Installations Only		
9	Gas Control	If either H2S analyzer reading is greater than 4 ppm at the meter station, an alarm will be initiated in SCADA. Gas Control will assess the situation and contact the Facility Operator to investigate further.
10	Gas Control, Facility Operator	If both H2S analyzer readings exceed 4 ppm without showing a downward trend for 15 minutes, Gas Control will remotely close the isolation valve. If both H2S analyzer readings exceed 6 ppm, the isolation valve will automatically close immediately. The Facility Operator must contact Gas Control by calling 403-699-1701.
11	Facility Operator, Gas Control, T-North On-Call Supervisor, Measurement Technician	If only one H2S analyzer reading exceeds 4 ppm, then the Facility Operator must verify the actual H2S content by taking a manual Draeger H2S reading at the facility outlet. If the manual Draeger H2S reading confirms that the H2S content is indeed above 4 ppm, Gas Control will remotely close the isolation valve. If the manual Draeger H2S reading shows that the H2S content is below 4 ppm, Gas Control will monitor the situation until the H2S analyzer discrepancy is resolved. In both cases, Gas Control will contact the T-North On-call Supervisor to dispatch a Measurement Technician to site to service the faulty H2S analyzer.
12	Facility Operator, Gas Control	If the isolation valve has been closed, the Facility Operator must follow steps 3 through 8 in the above procedure to restore normal operating conditions.

Expectations

Measurement Technical Services will ensure that the most up to date revision of this Standard Operating Procedure is communicated to all appropriate stakeholders. Gas Control and the Facility Operator must review and adhere to this procedure. Failure by the Facility Operator to follow this procedure may result in the removal of the H2S automated isolation system and force Enbridge to dispatch a Measurement Technician to site for all high H2S alarms. Enbridge's meter station H2S analyzer will be properly maintained and calibrated according to Measurement Technical Services specified procedures and frequency (SMP-M-320 & SMP-M-000). Any other H2S analyzer owned by the Facility Operator will be properly maintained and calibrated to industry accepted practices. Note that this procedure does not apply to H2O off-spec events.

Comments

- MS-153 and MS-183 commingle into a single pipeline lateral before tying into Enbridge. If either or both meter stations detect high H2S content, both meter stations will be isolated. The high H2S content meter station(s) must carry out the standard procedure described above to restore normal operating conditions.
- In the event of a power failure to the H2S analyzers, Gas Control will remotely shut in the meter station, and contact the T-North On-call Supervisor to dispatch a Measurement Technician to site to service the facility. Once power is restored, procedure steps 4 through 7 are followed.

Appendix – List of Meter Stations Applicable to SOP-M-300

The following list of meter stations is applicable to this document. Please direct any inquiries with regards to the information contained in this list to meastechservices@enbridge.com :

Meter Station ID	Meter Station Name
MS-76	Cypress Creek
MS-84	Flat Rock
MS-86	Aitken Creek Plant
MS-96	Caribou
MS-97	Highway
MS-99	Pine River
MS-104	Sunset
MS-107	Alliance McMahon
MS-108	Boundary Lake
MS-134	Parkland
MS-148	Sunset Groundbirch
MS-153	Blair Creek
MS-161	West Doe Plant
MS-162	West Doe Creek #2
MS-165	Kiskatinaw
MS-167	Sunset Groundbirch #2
MS-168	Septimus
MS-169	Altares
MS-170	Farrell Creek South
MS-171	Farrell Creek
MS-173	Septimum #2
MS-175	Groundbirch West
MS-176	Kobes North
MS-178	Daiber
MS-180	Farrell Creek #2
MS-182	Altares West
MS-183	Blair Creek #2
MS-184	Daiber South
MS-185	Sunrise
MS-186	Lily
MS-188	Blair North
MS-189	Caribou West
MS-190	Daiber West
MS-193	Townsend
MS-196	Aitken Creek North
MS-198	South Doe
MS-199	Dawson
MS-200	Blair Creek South
MS-204	Taylor T-North

Meter Station List Review

Review Date	Reviewed by	Comments
November 19th, 2015	K. Stevens, M. Dyker	Initial List
February 24, 2021	M Dyker	Updated List

Revision History

Revision #	Revision Date	Comments
Rev. 0	November 17th, 2015	Initial document by K. Checkwitch, A. Lee, M. Dyker
Rev. 1	July 18, 2017	Sharon Strauss – Update references of Spectra to Enbridge
Rev. 2	Feb 24, 2021	Annual Review – Branding and MS List Updates