



September 16, 2022

Robert Burrough
Director, Eastern Region,
Office of Pipeline Safety Pipeline and Hazardous Materials Safety Administration
840 Bear Tavern Road, Suite 300
West Trenton, NJ 08628

Re: CPF 1-2022-068-NOA and CPF 1-2022-069-WL

**2022 Notice of Amendment and Warning Letter for Roundup Underground
Natural Gas Storage Facility**

Dear Mr. Burrough,

Public Service Co of Colorado, a Colorado company and wholly owned subsidiary of Xcel Energy Inc. (PSCo) received a Notice of Amendment (NOA) and a Warning Letter (WL) from the Office of Pipeline Safety Pipeline and Hazardous Materials Safety Administration (PHMSA) dated August 18, 2022. The letters were received in response to the inspection which took place May 3, 2021 through May 7, 2021 for the Roundup Underground Natural Gas Storage Facility (Roundup) in Morgan County, Colorado.

Notice of Amendment (NOA)

1. **§ 192.12 Underground natural gas storage facilities.**
 - (a) ...
 - (b) **Depleted hydrocarbon and aquifer reservoir UNGSFs.**
 - (1) ••.
 - (2) **Each UNGSF that uses a depleted hydrocarbon reservoir or an aquifer reservoir for natural gas storage and was constructed on or before July 18, 2017, must meet the provisions of API RP 1171 (incorporated by reference, see §192.7), sections 8, 9, 10, and 11, and paragraph (c) of this section, by January 18, 2018, and must meet all provisions of paragraph (d) of this section by March 13, 2021.**

PSCC's written procedures were inadequate to assure safe operation of a pipeline facility. Specifically, PSCC's procedures required by API RP 1171, Section 11.2.1 failed to address API

RP 1171, Sections 6.3.5, 6.3.6, 6.3.7, 6.7.1, 6.9.1, 6.10.4 and 6.11.2. ¹

Section 11.2.1 states in part that "[t]he operator shall develop and follow procedures for the construction, operation, and maintenance of natural gas storage wells and reservoirs to establish and maintain functional integrity."

During the inspection, PSCC was not able to provide procedures addressing how it complies and maintain records relative to the aforementioned Section 6 requirements of API RP 1171. Thus, PSCC was unable to demonstrate that procedures were in place by January 18, 2018, or prior to the construction/workovers of wells #1, 10, and 20 or the plugging and abandoning of wells #2 and 33.

Therefore, PSCC's procedures were inadequate regarding portions of Section 6 of API RP 1171. PSCC must develop and follow procedures relative to these portions of Section 6 as required by Section 11.2.1.

PSCo Response

Xcel Energy selects Notice of Amendment Option IIa and does not contest the Notice. The Xcel Energy Storage Integrity Management Plan (SIMP) was reviewed and updated at the end of 2021 to address the concerns noted during the inspection. The concerns have been addressed and the changes are reflected in the 2022 Storage Integrity Management Plan, which is attached to our response. The table below summarizes each of the API 1171 references and the corresponding location of the change in the SIMP manual.

[illegible]

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
NOA	1	API RP1171, Section 6.7.1	Reference added. Additional revision pending to add specifics on isolation of storage and will be incorporated in the 2023-1 manual.	8.5.7 8.4.2-3
NOA	1	API RP1171, Section 6.9.1	Reference added. Additional revision pending to address max pressure and will be incorporated in the 2023-1 manual.	6.3.1
NOA	1	API RP1171, Section 6.10.4	Section 9.2 edited to state that any changes performed based on performance metrics are to be documented within a formal MOC. Section 11.3 edited to address the documenting of the formal MOC process	9.2 11.3
NOA	1	API RP1171, Section 6.11.2	Section 10.4 added to address records retention	4.3.1 10.4

2. § 192.12 Underground natural gas storage facilities.

(a) ...

(d) Integrity management program--

(1) ...

(4) Integrity management procedures and recordkeeping. Each UNGSF operator must establish and follow written procedures to carry out its integrity management program under API RP 1171 (incorporated by reference, see § 192.7), section 8 ("Risk Management for Gas Storage Operations"), and this paragraph (d). The operator must also maintain, for the useful life of the UNGSF, records that demonstrate compliance with the requirements of this paragraph (d). This includes records developed and used in support of any identification, calculation, amendment, modification, justification, deviation, and determination made, and any action taken to implement and evaluate any integrity management program element.

PSCC's procedures for carrying out its integrity management program were inadequate to ensure safe operation of a pipeline facility. Specifically, PSCC's Underground Storage Risk and Integrity Management Plan (IMP) did not provide specific information to be used to determine threat interaction susceptibility to threat and hazard-related events in accordance with API RP 1171, Section 8.3.2 (Section 8.3.2).

Section 8.3.2 states:

The operator shall use available information such as performance data collected through the field history, operations and maintenance (O&M) activities, geotechnical data such as well logs, engineering data, and completion reports to determine susceptibility to threat and hazard-related events and to assess threat and hazard interaction.

During the inspection, PSCC's IMP was reviewed, and it did not list available data used to determine

threat interaction susceptibility to threat and hazard-related events.

Therefore, PSCC's written procedures required by § 192.12(d)(4) were inadequate. PSCC must revise its procedures to include using all available data to determine threat interaction susceptibility to threat and hazard-related events in accordance with API 1171, Section 8.3.2.

PSCo Response

The table below summarizes the API 1171 reference and the corresponding location of the change in the updated SIMP manual.

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
NOA	2	API RP1171 Section 8.3.2	Section 4.5 references to other sections added for clarification. Section 4.5.1 clarification made regarding new information reviewed for threat interactions	4.5.1

3. § 192.12 Underground natural gas storage facilities.

(a) ...

(d) Integrity management program--

(1) ...

(4) Integrity management procedures and recordkeeping. Each UNGSF operator must establish and follow written procedures to carry out its integrity management program under API RP 1171 (incorporated by reference, see § 192.7), section 8 ("Risk Management for Gas Storage Operations"), and this paragraph (d). The operator must also maintain, for the useful life of the UNGSF, records that demonstrate compliance with the requirements of this paragraph (d). This includes records developed and used in support of any identification, calculation, amendment, modification, justification, deviation, and determination made, and any action taken to implement and evaluate any integrity management program element.

PSCC's procedures for carrying out its integrity management program were inadequate to ensure safe operation of a pipeline facility. Specifically, PSCC's IMP failed to include requirements for developing and documenting preventative and mitigative measures (P&M Measures) in accordance with API RP 1171, Section 8.6.2 (Section 8.6.2).

Section 8.6.2 states:

The operator shall develop P&M measures to manage risks.

The operator should review the P&M measures listed in Table 2 to determine those measures that manage risks based on site-specific conditions. Not all risks need a P&M measure if the level of risk is fully acceptable or if it is not necessary to reduce risk by further efforts.

The operator should employ the effective P&M measures and train their personnel on the

procedures related to the P&M measures (see Section 11). The operator can apply these P&M measures to individual wells, individual reservoirs or fields, and/or groups of wells or fields.

During the inspection, PHMSA reviewed PSCC's IMP and found that it did not contain a process for developing and documenting P&M Measures.

PSCC's written procedures required by § 192.12(d)(4) were inadequate. PSCC must revise its procedures to include detailed information about P&M Measures in accordance with API 1171, Section 8.6.2.

PSCo Response

The table below summarizes the API 1171 reference and the corresponding location of the changes in the updated SIMP manual.

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
NOA	3	API RP1171 Section 8.6.2	Section 8.2 expanded to include discussion on the documentation process of P&M selections. Section 9.2 edited to state that any changes performed based on performance metrics are to be documented within a formal MOC	8.2 9.2

4. § 192.12 Underground natural gas storage facilities.

(a) ...

(d) Integrity management program--

(1) ...

(4) Integrity management procedures and recordkeeping. Each UNGSF operator must establish and follow written procedures to carry out its integrity management program under API RP 1171 (incorporated by reference, see § 192.7), section 8 ("Risk Management for Gas Storage Operations"), and this paragraph (d). The operator must also maintain, for the useful life of the UNGSF, records that demonstrate compliance with the requirements of this paragraph (d). This includes records developed and used in support of any identification, calculation, amendment, modification, justification, deviation, and determination made, and any action taken to implement and evaluate any integrity management program element.

PSCC's written procedures for carrying out its integrity management program were inadequate to ensure safe operation of a pipeline facility. Specifically, PSCC's IMP failed to include a specified interval for a continual review and improvement cycle for its risk management activities in accordance with API RP 1171, Section 8.7.1.

Section 8.7.1 states:

The operator shall assess the effectiveness of risk monitoring and risk management programs and maintain a continual review and improvement cycle in risk management activities to provide functional integrity of the storage operation. The interval of review and reassessment should be short enough to identify operational and monitoring trends and measure the effectiveness of P&M measures, but long enough that the data and information that can be brought into the analysis are meaningful.

During the inspection, PSCC's IMP was reviewed, and it did not include a required interval for review and reassessment of its risk management activities.

Therefore, PSCC's written procedures required by § 192.12(d)(4) were inadequate. PSCC must revise its procedures to include a frequency requirement pursuant to the assessment required by API 1171, Section 8.7.1.

PSCo Response

The table below summarizes the API 1171 reference and the corresponding location of the changes in the updated SIMP manual.

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
NOA	4	API RP1171 Section 8.7.1	Section 4.5 references to other sections added for clarification. Additional revision pending to a define periodic review and will be incorporated in the 2023-1 manual.	4.5 4.7

Warning Letter (WL)

1. **§ 192.12 Underground natural gas storage facilities.**
 - (a) ...
 - (b) **Depleted hydrocarbon and aquifer reservoir UNGSFs.**
 - (1) ...
 - (2) **Each UNGSF that uses a depleted hydrocarbon reservoir or an aquifer reservoir for natural gas storage and was constructed on or before July 18, 2017, must meet the provisions of API RP 1171 (incorporated by reference, see §192.7), sections 8, 9, 10, and 11, and paragraph (c) of this section, by January 18, 2018, and must meet all provisions of paragraph (d) of this section by March 13, 2021.**

PSCC failed to meet the provisions of API RP 1171, Section 8. Specifically, PSCC failed to evaluate the potential threats and hazards of Hydrogen Sulfide (H₂S) gas in the Roundup storage field in accordance with API RP 1171, Section 8.4.2 (Section 8.4.2).

Section 8.4.2 states in part:

The operator shall evaluate the potential threats and hazards impacting storage wells and reservoirs. The operator should refer to the list of common threats and hazards in Table I and may supplement the list in Table I with other hazards or threats identified by site- specific assessments.

During the inspection, it was determined that PSCC did not include the threat of Hydrogen Sulfide gas (H₂S) in their risk model, which was a known threat.

Therefore, PSCC failed to meet the provisions of Section 8.4.2.

PSCo Response

The table below summarizes each of the API 1171 references and the corresponding location of the changes in the updated SIMP manual.

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
Warning Letter	1	API RP1171 Section 8.4.1	Section 4.4 updated to clarify that Xcel does not exclude any threats at this time	4.4
Warning Letter	1	API RP1171, Section 9.2.1	Section 15.2 updated for inclusion of safety measures regarding H ₂ S at Roundup	4.4.2 15.2

2. § 192.12 Underground natural gas storage facilities.

(a) ...

(b) Depleted hydrocarbon and aquifer reservoir UNGSFs.

(1) ...

(2) Each UNGSF that uses a depleted hydrocarbon reservoir or an aquifer reservoir for natural gas storage and was constructed on or before July 18, 2017, must meet the provisions of API RP 1171 (incorporated by reference, see §192.7), sections 8, 9, 10, and 11, and paragraph (c) of this section, by January 18, 2018, and must meet all provisions of paragraph (d) of this section by March 13, 2021.

PSCC failed to meet the provisions of API RP 1171, Section 9. Specifically, PSCC failed to utilize its risk assessments to develop the frequency of their integrity demonstration, verification and monitoring tasks in accordance with API RP 1171, Section 9.2.2.

Section 9.2.2 Risk-based Evaluation states:

Risk assessments shall be used as a basis for developing the integrity demonstration, verification, and monitoring tasks and evaluating their frequency requirements (see Section 8). Following the risk assessment, the operator should develop and maintain a program and procedures to address storage reservoir and well integrity monitoring practices for each storage facility, multiple facilities, and/or system-wide. The operator's approach should address

the need for reevaluation of risk-based conclusions and the monitoring task frequency.

During the inspection, PSCC was not able to provide records that demonstrate that they had used their risk assessments to develop the frequency of their various integrity requirements.

Therefore, PSCC failed to meet the provisions of Section 9.2.2.

PSCo Response

The table below summarizes the API 1171 reference and the corresponding location of the changes in the updated SIMP manual.

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
Warning Letter	2	API RP1171 Section 9.2.2	Additional revision pending to add record requirements to Section 10.4 and will be incorporated in the 2023-1 manual.	1.3(3) 2.4 4.0

3. § 192.12 Underground natural gas storage facilities.

(a) ...

(b) Depleted hydrocarbon and aquifer reservoir UNGSFs.

(1) ...

(2) Each UNGSF that uses a depleted hydrocarbon reservoir or an aquifer reservoir for natural gas storage and was constructed on or before July 18, 2017, must meet the provisions of API RP 1171 (incorporated by reference, see §192.7), sections 8, 9, 10, and 11, and paragraph (c) of this section, by January 18, 2018, and must meet all provisions of paragraph (d) of this section by March 13, 2021.

PSCC failed to meet the provisions of API RP 1171, Section 11.11.1 Specifically, PSCC failed to follow a Management of Change (MOC) process in the update of their SIMP plan of January 2021 in accordance with API RP 1171, Section 11.11.1.

Section 11.11.1 General states:

Revision of procedures and processes is an acceptable practice, but the operator shall require changes to be accomplished in a controlled manner. The program documentation, framework, and procedures shall be revised before the change can be implemented. Not all changes need be approved through a formal MOC process. Some changes are expected and may not be subject to a formal change control process. The operator should define the types of changes determined to be significant and requiring a MOC.

During the inspection, PSCC was not able to provide records that demonstrated they had used their MOC process in updating their SIMP plan in January 2021.

Therefore, PSCC failed to meet the provisions of Section 11.11.1.

PSCo Response

The table below summarizes the API 1171 reference and the corresponding location of the changes in the updated SIMP manual.

PHMSA Letter	Issue	Code Reference	Revision	Updated SIMP Section(s)
Warning Letter	3	API RP1171 Section 11.11.1	Section 11.3 edited to address the documenting of the formal MOC process. Additional revision pending to add record requirements to Section 10.4.	11.3 10.0

If you need any further information or clarification regarding this matter, please contact Mark Nolan at Mark.Nolan@xcelenergy.com.

Sincerely,



Luke Litteken
Senior Vice President, Gas