



April 15, 2024

Dustin Hubbard
Director, Western Region,
Office of Pipeline Safety Pipeline and Hazardous Materials Safety Administration
12300 W. Dakota Ave., Suite 110
Lakewood, CO 80228

Re: CPF 5-2024-015-NOPV

2023 Notice of Probable Violations Control Room Management Inspection

Dear Mr. Hubbard,

Public Service Co of Colorado, a Colorado company and wholly owned subsidiary of Xcel Energy Inc. (Public Service) received a Notice of Probable Violation (NOPV) and Proposed Compliance Order (CO) from the Office of Pipeline Safety Pipeline and Hazardous Materials Safety Administration (PHMSA) dated April 15, 2024. The letter was received in response to the inspection, which took place October 2 through 12, 2023, for the Gas Control Rooms in Denver, Colorado and St. Paul, Minnesota.

Public Service includes responses to each PHMSA probable violation and associated proposed compliance order, as well as each warning letter item below to demonstrate the additional remedial actions taken by the operator.

1. § 192.631 Control Room Management.

(b) *Roles and responsibilities.* Each operator must define the roles and responsibilities of a controller during normal, abnormal, and emergency operating conditions. To provide for a controller's prompt and appropriate response to operating conditions, an operator must define each of the following:

- (1) A controller's authority and responsibility to make decisions and take actions during normal operations;**
- (2) A controller's role when an abnormal operating condition is detected, even if the controller is not the first to detect the condition, including the controller's responsibility to take specific actions and to communicate with others;**
- (3) A controller's role during an emergency, even if the controller is not the first to detect the emergency, including the controller's responsibility to take specific actions and to communicate with others...**

Xcel failed to clearly define roles and domain of responsibility for each Controller. Xcel Control Rooms have more than one Controller on shift. During inspection, a review of the Operator's procedures in Appendix B of their CRM Plan revealed they failed to include specific roles, domain of responsibility, and authority for each Controller while working together on a console with multiple Controllers on duty.

Therefore, Xcel failed to comply with §192.631(b) by improperly defining the roles and responsibilities of a Controller during normal, abnormal, and emergency operating conditions.

Public Service Response

Xcel Energy previously defined the responsibilities of a Controller in normal, abnormal, and emergency situations, but it was not included in its Control Room Management (CRM) Manual for its PSCO Gas Control Room, which serves pipelines in Colorado, Texas, and Wyoming.

This issue was addressed in the 2024-1 revision of the CRM, specifically in Section 1.4 - Roles and Responsibilities. The CRM now explicitly lists the roles and responsibilities for the East and West desks in the PSCO Control Room. The changes came into effect on January 1, 2024.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

Public Service has opted for option 1 for this proposed compliance order, as the item has already been completed. Public Service requests that PHMSA close this item.

2. § 192.631 Control Room Management.

(b) *Roles and responsibilities.* Each operator must define the roles and responsibilities of a controller during normal, abnormal, and emergency operating conditions. To provide for a controller's prompt and appropriate response to operating conditions, an operator must define each of the following:

- (1)** A controller's authority and responsibility to make decisions and take actions during normal operations;
- (2)** A controller's role when an abnormal operating condition is detected, even if the controller is not the first to detect the condition, including the controller's responsibility to take specific actions and to communicate with others;
- (3)** A controller's role during an emergency, even if the controller is not the first to detect the emergency, including the controller's responsibility to take specific actions and to communicate with others;
- (4)** A method of recording controller shift-changes and any hand-over of responsibility between controllers; and
- (5)** The roles, responsibilities and qualifications of others with the authority to direct or supersede the specific technical actions of a controller.

Xcel failed to properly define trainer/trainee roles, responsibilities, and qualifications. During inspection, a review of the Operator's procedures in Appendix B of the CRM Plan revealed they failed to define that trainees must work under the direction of a qualified Controller until the trainee is qualified.

Therefore, Xcel failed to comply with §192.631(b) by improperly defining the roles, responsibilities, and qualifications of others with the authority to direct the specific technical actions of a Controller.

Public Service Response

This concern was addressed in the 2024-1 revision of the CRM, specifically Section 1.4 – Roles and Responsibilities. The CRM now specifically states:

Only a Gas Controller who is Operator Qualified (OQ) may override the technical direction of another Gas Controller. All other persons (Field Operators, Engineers, and/ or Gas Operations Leadership) do not have the authority to direct or supersede the technical actions of a Gas Controller. If another qualified person overrides a controller's actions, that person is accountable for outcomes. In this unusual event, a log of the change shall be documented in the SCADA system. All other persons do not have the authority to direct or supersede the technical actions of controllers. However, subject matter experts may offer consultation on controller decisions.

This revision was effective from January 1, 2024.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

Public Service has opted for option 1 for this proposed compliance order, as the item has already been completed. Public Service requests that PHMSA close this item.

3. § 192.631 Control Room Management.

(c) Provide adequate information. Each operator must provide its controllers with the information, tools, processes and procedures necessary for the controllers to carry out the roles and responsibilities the operator has defined by performing each of the following:

(1) Implement sections 1, 4, 8, 9, 11.1, and 11.3 of API RP 1165 (incorporated by reference, see § 192.7) whenever a SCADA system is added, expanded or replaced, unless the operator demonstrates that certain provisions of sections 1, 4, 8, 9, 11.1, and 11.3 of API RP 1165 are not practical for the SCADA system used...

Xcel failed to provide adequate Controller information. During inspection, a review of Operator CRM Plan Appendix C procedures revealed a lack of consistency in their naming conventions utilized for SCADA alarm tag descriptions. API 1165 Sections 4.4 & 8.5 require consistency in display design and labeling. Operator further failed in providing deviation documentation as listed in their CRM Plan Appendix C(1) procedure, regarding elements of API 1165 that are impractical.

Therefore, Xcel failed to comply with §192.631(c)(1) by failing to provide Controllers adequate information.

Public Service Response

There may have been a misunderstanding between the Public Service Gas Controller and the PHMSA Inspection team during the inspection, regarding a possible violation. The SCADA system does have a standard process for naming conventions, workstations, and controllers, which is fully compliant with 192.631. Controllers are provided adequate information, including standard information via SCADA. As a result, Public Service has decided to choose option 3 for the associated compliance order.

Although various standards have been in place for legacy installations, Public Service is working on developing a new standard design and description tags. These will be used for all new Remote Terminal Units (RTUs) connected to Gas SCADA, and will be developed within 180 days. The new standard design and description tags will be incorporated into CRM, Appendix L for SCADA HMI Style Guide. However, this new design will not affect the information provided to controllers, which is already standardized.

4. § 192.631 Control Room Management.

(d) Fatigue mitigation. Each operator must implement the following methods to reduce the risk associated with controller fatigue that could inhibit a controller's ability to carry out the roles and responsibilities the operator has defined:

- (1) Establish shift lengths and schedule rotations that provide controllers off-duty time sufficient to achieve eight hours of continuous sleep;**
- (2) Educate controllers and supervisors in fatigue mitigation strategies and how off-duty activities contribute to fatigue;**
- (3) Train controllers and supervisors to recognize the effects of fatigue; and**
- (4) Establish a maximum limit on controller hours-of-service, which may provide for an emergency deviation from the maximum limit if necessary for the safe operation of a pipeline facility.**

Xcel failed to properly mitigate fatigue by insufficiently staffing their Control Center. The Xcel Public Service Company of Colorado (PSCO) Control Center has three desks: East & West desks manned 24/7, plus a third desk manned on day shift for support. During the inspection, a review of the Controller work schedule showed insufficient staffing for their Control Room operations. This failure to properly staff the Control Center regularly causes existing staff to cover excessive shifts outside of their normal work schedule, adversely affecting the controller fatigue risk.

Therefore, Xcel failed to comply with §192.631(d) by improperly staffing their Control Center.

Public Service Response

The NSP Control Room has been adequately staffed.

The PSCO Control Room has added staff and made significant investments to enhance and optimize its SCADA. This has reduced scheduling exceptions from about 90 in 2022 to a normal amount of 6 in 2023. The number of alarms has greatly reduced in recent years due in part to system optimization.

The PHMSA Whitepaper referenced in the proposed compliance order is not mandatory by regulation. It also does not take into account all factors necessary to make an adequate determination on staffing levels. Control room technology has changed since the whitepaper was released over thirteen years ago. Public Service has undertaken considerable efforts to optimize its SCADA system and reduce impact, including the number of alarm controllers received.

Public Service chooses option 3 for the associated compliance order.

Public Service will conduct a new baseline workload analysis as described in the notice of proposed violation No. 7. After completing the baseline workload analysis, Public Service will evaluate whether additional control staffing is prudent.

5. § 192.631 Control Room Management.

(e) *Alarm management.* Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms. An operator's plan must include provisions to:

- (1) ...**
- (2) Identify at least once each calendar month points affecting safety that have been taken off scan in the SCADA host, have had alarms inhibited, generated false alarms, or that have had forced or manual values for periods of time exceeding that required for associated maintenance or operating activities...**

Xcel failed to properly evaluate safety related SCADA alarms during their monthly alarm analysis. During inspection, a review of Operator procedures in Appendix E(2) and E(3) of the CRM Plan showed

insufficient identification of points affecting safety that have been taken off scan, have had alarms inhibited, generated false alarms, or that have had forced or manual values.

Therefore, Xcel failed to comply with §192.631(e)(2) by failing to properly identify Safety Related points which have been taken off scan, have had their alarms inhibited, have generated false alarms, or have had forced or manual values on a monthly basis.

Public Service Response

Public Service has and continues to perform a weekly review of bases of alarm, including those off scan.

A “False alarms” tag has been added to Gas Control SCADA system.

Public Service chooses option 2 for the associated compliance order. Considering the items completed, as resolving this Notice of Proposed Violation.

6. § 192.631 Control Room Management.

(e) Alarm management. Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms. An operator's plan must include provisions to:

(1) ...

(4) Review the alarm management plan required by this paragraph at least once each calendar year, but at intervals not exceeding 15 months, to determine the effectiveness of the plan;

Xcel failed to properly evaluate effectiveness of the Alarm Management Plan. During inspection, a review of Xcel’s CRM Plan Appendix E(4) demonstrated it lacked a procedure on how to conduct and document an analysis regarding Alarm Management Plan effectiveness.

Therefore, Xcel failed to comply with §192.631(e)(4) by failing to properly determine the effectiveness of the Alarm Management Plan.

Public Service Response

This concern was addressed in the 2024-1 revision of the CRM, specifically Section E(4) – Alarm Management Plan Review. The CRM now specifically states:

Xcel Energy shall review this Alarm Management Plan (Appendix E) at least once each calendar year, but at intervals not exceeding fifteen (15) months, to determine the effectiveness of the plan. Alarm Management will be deemed effective by comparing actual values to the alarm settings, the number of MAOP alarms compared to prior years, and the number of and type of alarms received compared to prior years. An effective alarm management plan will reduce MAOP alarms through consistency and accuracy in alarms, will see actual values within the alarm limits, and will reduce alarm type and frequency by ensuring alarms are set correctly when commissioned and or changed when necessary.

This revision was effective January 1, 2024.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

Public Service has opted for option 1 for this proposed compliance order, as the item has already been

completed. Public Service requests that PHMSA close this item.

7. § 192.631 Control Room Management.

(e) *Alarm management.* Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms. An operator's plan must include provisions to:

(1) ...

(5) Monitor the content and volume of general activity being directed to and required of each controller at least once each calendar year, but at intervals not to

exceed 15 months, that will assure controllers have sufficient time to analyze and react to incoming alarms; and

(6) Address deficiencies identified through the implementation of paragraphs (e)(1) through (e)(5) of this section.

Operator failed to properly monitor the content and volume of general activity being directed to and required of each Controller at least once each calendar year. During inspection, a review of Xcel records showed Operator failed to provide documentation demonstrating it had performed proper annual Controller workload analyses for the calendar years of 2020, 2021, and 2022.

Therefore, Xcel failed to comply with §192.631(e)(5) by failing to perform a proper workload analysis at least once each calendar year, but at intervals not to exceed 15 months.

Public Service Response.

Public Service continues to assess and monitor the content and volume of general activity being directed to and required of Gas Controllers.

A third-party workload study was last performed in 2018. Since then, the alarm numbers have decreased and then stabilized for the previous four years. Additionally, the workload and the number of procedures and alarms have gone down since the last workload study.

Public Service chooses, option 2 for this proposed compliance order:

A new SCADA system is being implemented in 2024. Public Service will conduct a third-party baseline workload analysis within 365 days of the final order. This will allow the system and work to stabilize providing for a accurate baseline analysis. This analysis will also be used to help determine the adequacy of number of Controllers, listed in NOPV No. 4.

8. § 192.631 Control Room Management.

(e) *Alarm management.* Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms. An operator's plan must include provisions to:

(1) Review SCADA safety-related alarm operations using a process that ensures alarms are accurate and support safe pipeline operations;

(2) Identify at least once each calendar month points affecting safety that have been taken off scan in the SCADA host, have had alarms inhibited, generated false alarms, or that have

had forced or manual values for periods of time exceeding that required for associated maintenance or operating activities;

(3) Verify the correct safety-related alarm set-point values and alarm descriptions at least once each calendar year, but at intervals not to exceed 15 months;

(4) Review the alarm management plan required by this paragraph at least once each calendar year, but at intervals not exceeding 15 months, to determine the effectiveness of the plan;

(5) Monitor the content and volume of general activity being directed to and required of each controller at least once each calendar year, but at intervals not to exceed 15 months, that will assure controllers have sufficient time to analyze and react to incoming alarms; and

(6) Address deficiencies identified through the implementation of paragraphs (e)(1) through (e)(5) of this section.

Operator failed to address deficiencies identified through the implementation of paragraphs 192.631(e)(1) through (e)(5). Review of Xcel records show Operator failed to follow the “Alarm Management Plan Deficiency” form in their Xcel CRM Plan E(6) procedure for the calendar years of 2020, 2021, or 2022.

Therefore, Xcel failed to comply with §192.631(e)(6) by failing to properly address Alarm Management Plan deficiencies.

Public Service Response

This concern was addressed in the 2024-1 revision of the CRM, specifically Section E(4) – Alarm Management Plan Review. The reference to the legacy “Alarm Management Plan Deficiency” form is no longer used, and its reference was removed from the CRM. It was revised to the current process; the CRM now specifically states:

Changes implemented as a result of deficiencies identified in the Alarm Management Plan will be documented using Xcel Energy’s Management of Change process outlined in Pipeline and Compliance Manual Section 1.19.

This revision was effective January 1, 2024.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

Public Service has opted for option 2 for this proposed compliance order, as the “Alarm Management Plan Deficiency” form reference has been removed and is no longer used. Public Service requests that PHMSA close this item.

9. § 192.631 Control Room Management.

(f) *Change management.* Each operator must assure that changes that could affect control room operations are coordinated with the control room personnel by performing each of the following:

(1) Establish communications between control room representatives, operator's management, and associated field personnel when planning and implementing physical changes to pipeline equipment or configuration;

(2) Require its field personnel to contact the control room when emergency conditions exist and when making field changes that affect control room operations; and

(3) Seek control room or control room management participation in planning prior to implementation of significant pipeline hydraulic or configuration changes.

Xcel failed to establish adequate communications between the Control Room and project planning/implementation personnel. During inspection, Controller interviews noted Xcel failed to properly involve and coordinate with Gas Control personnel in the project planning process, which inhibits adequate time for Gas Control setup.

Therefore, Xcel failed to comply with §192.631(f) by failing to establish adequate communications between Control Room representatives, Xcel's management, and associated field personnel when planning and implementing physical changes to pipeline equipment or configuration.

Public Service Response

There may have been a misunderstanding between the Public Service Gas Controller and the PHMSA Inspection team during the inspection, regarding a possible violation. The Gas Control Manager meets weekly with the Process Control Engineering team to plan projects. Procedures are generally reviewed at least 7 days prior to execution. Work requiring Gas Control modifications or notification does not take place without an approved procedure and/or approved Management of Change.

As a result, Public Service has decided to choose option 3 for the associated compliance order.

10. § 192.631 Control Room Management.

(h) *Training.* Each operator must establish a controller training program and review the training program content to identify potential improvements at least once each calendar year, but at intervals not to exceed 15 months. An operator's program must provide for training each controller to carry out the roles and responsibilities defined by the operator. In addition, the training program must include the following elements:

- (1)** Responding to abnormal operating conditions likely to occur simultaneously or in sequence;
- (2)** Use of a computerized simulator or non-computerized (tabletop) method for training controllers to recognize abnormal operating conditions;
- (3)** Training controllers on their responsibilities for communication under the operator's emergency response procedures;
- (4)** Training that will provide a controller a working knowledge of the pipeline system, especially during the development of abnormal operating conditions;
- (5)** For pipeline operating setups that are periodically, but infrequently used, providing an opportunity for controllers to review relevant procedures in advance of their application; and
- (6)** Control room team training and exercises that include both controllers and other individuals, defined by the operator, who would reasonably be expected to operationally collaborate with controllers (control room personnel) during normal, abnormal or emergency situations. Operators must comply with the team training requirements under this paragraph by no later than January 23, 2018.

Xcel failed to implement a proper Controller training program. During inspection, a review of the Operator CRM Plan Appendix H training procedure demonstrated a failure of Xcel to implement a structured training program for new Controllers specific to the Xcel pipelines they control.

Therefore, Xcel failed to comply with §192.631(h) by failing to establish a proper training program.

Public Service Response

NSP Control Room training program is very structured.

PSCO Control Room has and utilizes a training outline to supplement its Control Room Management training that is part of Operator Qualifications. More detail will be added to provide further structure within 180 days. The bargaining unit needs to approve it before it can be fully implemented. Public Service has chosen option 2 for the associated compliance order.

11. § 192.631 Control Room Management.

(h) *Training.* Each operator must establish a controller training program and review the training program content to identify potential improvements at least once each calendar year, but at intervals not to exceed 15 months. An operator's program must provide for training each controller to carry out the roles and responsibilities defined by the operator. In addition, the training program must include the following elements:

(1) ...

(6) Control room team training and exercises that include both controllers and other individuals, defined by the operator, who would reasonably be expected to operationally collaborate with controllers (control room personnel) during normal, abnormal or emergency situations. Operators must comply with the team training requirements under this paragraph by no later than January 23, 2018.

Xcel failed to provide Control Room team training to individuals who would reasonably be expected to operationally collaborate with Controllers. During the inspection, a review of Xcel's team training procedures in their CRM Plan Appendix H(6) failed to identify key individuals and/or groups who should participate, and failed to adequately list the required training frequency.

Operator further failed to provide records to demonstrate compliance with the team training requirements by the January 23, 2018 deadline.

Therefore, Xcel failed to comply with §192.631(h)(6) by failing to provide adequate Control Room team training to individuals who would reasonably be expected to operationally collaborate with Controllers during normal, abnormal or emergency situations.

Public Service Response

Public Service utilizes a combination of the elements to conduct team training, as outlined in its CRM plan. The company has routinely conducted required drills and documented information through identified elements.

To enhance record keeping, Public Service will further expand its team training.

Public Service has decided to choose option 3 for the associated compliance order. Developing and implementing the additional training within 180 days.

12. § 192.631 Control Room Management.

(b) *Roles and responsibilities.* Each operator must define the roles and responsibilities of a controller during normal, abnormal, and emergency operating conditions. To provide for a controller's prompt and appropriate response to operating conditions, an operator must define each of the following:

(1) A controller's authority and responsibility to make decisions and take actions during normal operations;

(2) A controller's role when an abnormal operating condition is detected, even if the controller is not the first to detect the condition, including the controller's responsibility to take specific actions and to communicate with others;

Xcel failed to properly define Controller roles and responsibilities during normal, abnormal, and emergency operating conditions. During inspection, a review of the operator's procedures in Appendix B of the CRM Plan revealed they failed to properly define the Controller's authority and responsibility to make decisions and take actions, including defining what actions would require Supervisor approval.

Therefore, Xcel failed to comply with §192.631(b) by improperly defining the Controller roles and responsibilities of a Controller during normal, abnormal, and emergency operating conditions in its CRM program.

Public Service Response

The Xcel Energy Control Room Management (CRM) Plan does not outline the Controller roles and responsibilities of a Controller during normal, abnormal, and emergency operating conditions in CRM Appendix B.

This concern was addressed in the 2024-1 revision of the CRM, or specifically Section 1.4 – Roles and Responsibilities. The CRM now specifically lists the roles and responsibilities for the East and West desks in the PSCO Control Room. This revision was effective January 1, 2024.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

Also, see the responses to NOPV No. 1 and No. 2.

13. § 192.631 Control Room Management.

(b) *Roles and responsibilities.* Each operator must define the roles and responsibilities of a controller during normal, abnormal, and emergency operating conditions. To provide for a controller's prompt and appropriate response to operating conditions, an operator must define each of the following:

(1) A controller's authority and responsibility to make decisions and take actions during normal operations;

(2) A controller's role when an abnormal operating condition is detected, even if the controller is not the first to detect the condition, including the controller's responsibility to take specific actions and to communicate with others;

(3) A controller's role during an emergency, even if the controller is not the first to detect the emergency, including the controller's responsibility to take specific actions and to

communicate with others;

(4) A method of recording controller shift-changes and any hand-over of responsibility between controllers; and

(5) The roles, responsibilities and qualifications of others with the authority to direct or supersede the specific technical actions of a controller.

Xcel failed to properly define the Controller's responsibility to communicate with others. During inspection, a review of the Operator's procedures in CRM Plan Appendix B demonstrated a failure to define how long a Controller may be away from the desk before a shift change should be performed.

Therefore, Xcel failed to comply with §192.631(b) by improperly defining the Controller's responsibility to communicate with others, including the hand-over of responsibility between Controllers.

Public Service Response

This concern was addressed in the 2024-1 revision of the CRM,. The CRM, Sections B.1 and C.7 were revised to clarify that if a Controller expects to leave the desk for more than 30 minutes, a Shift Transfer is required. This revision was effective January 1, 2024.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

14. § 192.631 Control Room Management.

(b) *Roles and responsibilities.* Each operator must define the roles and responsibilities of a controller during normal, abnormal, and emergency operating conditions. To provide for a controller's prompt and appropriate response to operating conditions, an operator must define each of the following:

(1) ...

(4) A method of recording controller shift-changes and any hand-over of responsibility between controllers;

Xcel failed to establish an adequate method of recording Controller shift-changes and hand-over of responsibility between Controllers. During inspection, a review of the Operator's procedures in Appendix C of the CRM Plan revealed they failed to establish a thorough shift change handover method.

Therefore, Xcel failed to comply with §192.631(b)(4) by failing to establish an adequate method of recording controller shift-changes and hand-over of responsibility between controllers.

Public Service Response

Public Service has a shift transfer procedure, and its governance and detail are built directly into the SCADA software. There were some revisions to CRM 2024-1 were made to provide additional specificity to controllers.

On January 11, 2024, the PHMSA inspector received a copy of the revised CRM (2024-1) via email.

If you need any further information or clarification regarding this matter, please contact Jeff Cremin at Jeffrey.J.Cremin@xcelenergy.com.

Sincerely,

A handwritten signature in black ink, reading "Lauren Gilliland". The signature is written in a cursive, flowing style.

Lauren Gilliland
Vice President, Natural Gas Unit

Cc:

Micheal Buss (PHMSA)

Chris Akins, Jeff Cremin, Todd Nodes, Heidi Bennedit (Xcel Energy)