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October 21, 2021

Sean Mayo
Pipeline Safety Director
Washington Utilities and Transportation Commission
Pipeline Safety Section
621 Woodland Square Loop S.E.
Lacey, WA 98503

**RE: 2021 Natural Gas Control Room Management – Puget Sound Energy Headquarters
(Insp. No. 8294)**

Dear Mr. Mayo:

PSE received and reviewed your letter dated September 23, 2021 regarding the 2021 Control Room
Management audit. Pursuant to your request, the following is PSE's response to two probable violations
and seven areas of concern.

<p style="text-align:center;">Probable Violation</p>

1. **CFR §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.**

Finding(s):

The 2018 PSE Control Room Management Plan (CRMP) fails to address how deficiencies discovered during the implementation of §192.631(e)(1-5) will be resolved. It was noted during the review of the 2018, 2019 and 2020 Alarm Management Effectiveness Reviews, that PSE generates a list of "bad actors" (false alarms), RTU issues, and gas tariff quality alarms. However, a schedule to fix these deficiencies does not exist. PSE should promptly correct specific issues commensurate with their importance to safety. PSE should maintain records which show an itemized list of deficiencies, their date of discovery, the corrective action to be taken, and the completion date (or schedule) for corrective actions. The procedure should provide a criterion and/or guidelines for prioritizing the resolution and correction of deficiencies. PSE's documentation should also record the basis for the selection and scheduling of corrective action.

PSE Response:

PSE generates a list of alarms while performing periodic alarm reviews, including an annual Alarm Management Effectiveness review. The deficiencies are identified from the list of alarms and assigned a risk score based on probability, frequency and consequence. Correction of specific issues based on risk score has been completed or is scheduled for remediation. To further mature the deficiency review process, we will incorporate prioritization of the list of deficiencies, assign resolution commensurate with their importance to safety, record the criteria for selection and monitor status. This maturity plan is targeted to be completed by end of Q1 2022. The Supervisor Gas Control will add the list of deficiencies to the existing Gas Operations Dashboard. The Dashboard will display an itemized list; prioritization for remediation; and status update using red, yellow, green stop light indicators. The Dashboard is published monthly and is available to Gas Operations staff and will enable a larger organization, including Gas Control, to have awareness and visibility to corrective actions and their status. The updated Dashboard will be part of the monthly distribution starting in 2022. Additionally, the CRM Plan will be updated by March 2022 to include the process of addressing deficiencies discovered during Alarm Management Effectiveness review, including guideline for prioritization and scheduling of corrective action. The completion of resolution will be tracked and documented using SAP work orders with targeted implementation by end of Q1 2022.

2. CFR §192.605 – Procedural manual for operations, maintenance, and emergencies

(a) *General.* Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response. For transmission lines, the manual must also include procedures for handling abnormal operations. This manual must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year. This manual must be prepared before operations of a pipeline system commence. Appropriate parts of the manual must be kept at locations where operations and maintenance activities are conducted.

Finding(s):

PSE failed to follow their procedures for following up on action items from annual backup SCADA tests. The following items were identified as action items that needed follow up:

- 3/29/2018 - LNG did not connect.
- 7/18/2018 - LNG did not connect.
- 7/24/2019 - several comms failed in Chehalis and Buckley.
- 11/16/2020 - did not return to primary stayed on backup until primary could be restored.

PSE CRMP 7700.3400, section 4.6, states that the supervisor shall ensure that all necessary action items from the test are addressed. No records were available of follow up on these issues with the backup SCADA tests.

PSE Response:

PSE will update the Backup Control Center (BUCC) Form 6095, by end of Q1 2022 to require a work flow for Supervisor to review and ensure that all necessary action items from the back up test are

addressed. The Supervisor will attach documentation to show completion of action items. The language in CRMP 7700.3400 Section 5 will be updated by March 2022 to include record retention requirement.

Areas of Concern

1. **CFR §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.

Finding(s):
The 2018 PSE Control Room Management Plan fails to address the importance of remaining at the console and staying attentive once critical commands have been executed. Some SCADA commands can be complex or take extended periods of time to execute in the field. Controllers should not leave the console prematurely or let shift change processes interfere with the fulfillment of command actions or critical communications with field personnel.

PSE Response:
PSE will add language in CRMP 7700.2000 Section 3.3 emphasizing that Controllers remain at the console until critical command has been completed. Additional training will be provided on the updated CRMP section and effectiveness evaluation will be performed through test questions. The CRMP update will be targeted for March 2022 and will be followed by the training.

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

Finding(s):
The 2018 PSE Control Room Management Plan fails to provide a procedure for how the policy disallowing others to have authority to direct or supersede the specific technical actions of a controller has been communicated to controllers and others. The policy disallowing others to direct controller actions (in any operating mode) should be included in training or some other form of communication with the controllers (e.g., controller awareness training, policy statement on bulletin board, etc.).
This written policy or documentation must be readily available to controllers so that every controller unambiguously knows which (if any) individuals are authorized to direct or supersede the controller's actions (for reference and use as needed should unauthorized individuals attempt to direct or supersede controller actions.

PSE Response:
The CRMP 7700.2000 Section 3.5 states that "While gas controller may consult with and gather information from subject matter experts before taking technical actions, Gas Controllers are responsible for, and have final authority over, the technical actions in the control room." The Gas Control Training Module 4.1.2 will be updated effective October 29, 2021 to include this explicit language into the training script and the training is scheduled to be completed by December 31, 2021. Additionally, during routine staff and safety meetings, the Controller's role as the final authority over technical actions in the control room will be discussed.

3. **CFR §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.

Finding(s):
The Jan. 19, 2017, PSE SCADA display design guide shows valves either being green or red depending on open or closed status. When looking at Vashon Island automatic valves, it was noted that the valves do not show green or red indication of status. PSE should clarify and update this discrepancy. Section 6 of PSE Design Guide uses API 1165 Section 8 criteria for SCADA displays. PSE uses the static symbol for all control valves and intend to update the schematic to reflect this, however this action could not be completed prior to the exit interview.

PSE Response:
The PSE Design Guide Section 4.1 uses API 1165 Sec 8 criteria for SCADA display and describes the display graphics to either be "Static Graphics" which includes all non-telemetry devices represented as static gray device or "Dynamic Graphics" which includes all composite or dynamic composite devices such as Vashon Island automatic valves that were noted during the inspection. Gas Control is developing a solution with IT to update the SCADA display so that the color of the dynamic device changes between green or red to indicate the status. This effort is targeted to be completed by December 31, 2021.

4. **CFR §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:

   (2) Conduct a point-to-point verification between SCADA displays and related field equipment when field equipment is added or moved and when other changes that affect pipeline safety are made to field equipment or SCADA displays.

Finding(s):
The 2018 PSE Control Room Management Plan fails to provide a procedure for how safety related data points are determined and defined. The requirement is to verify all safety related points in the SCADA system. This would also include calculated (software generated) points that are safety related. Safety-related points often, but do not necessarily, have alarms associated with them. FAQ CRM: C.01 provides a list of potential safety related points.

PSE Response:
PSE has identified safety related points under CRMP 7700.5000 Section 4 and has a procedure for conducting point to point verification of all SCADA points, including safety related points in CRMP 7700.3100 Sections 3 and 4.

5. **CFR §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:

   (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.

Finding(s):
The 2018 PSE Control Room Management Plan fails to provide a procedure for specific fatigue countermeasures that will be implemented for shifts longer than 8 hours, especially for the ninth and beyond hours.

PSE Response:
PSE will review the CRMP 7700.4000 Fatigue Management procedure and the Fatigue Risk Management System Plan by March 2022 and add additional information about use of specific countermeasures for fatigue mitigation, where applicable.

6. **CFR §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:
    > (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.

Finding(s):
The 2018 PSE Control Room Management Plan fails to provide a procedure for specific fatigue countermeasures during applicable time periods, or a documented technical basis to show that the maximum limit on controller HOS is adequate to reduce the risk associated with controller fatigue. Applicable time periods refer to:
- Any and all shift duty hours worked after the first 8 hours.
- Any and all hours worked between 2:00 a.m. and 6:00 a.m.
- Any and all night shifts immediately following three successive nights.
- Any and all day or night shifts following four successive night shifts unless three nocturnal sleep cycles have been completed.

PSE Response:
PSE will review the CRMP 7700.4000 Fatigue Management procedure and the Fatigue Risk Management System Plan by March 2022 and add additional information about use of specific countermeasures for fatigue mitigation, where applicable.

7. **CFR §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.
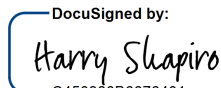
Finding(s):

The 2020 PSE Gas Control Training Manual contains a different review date for each individual module that has been reviewed. However, it was not clear if this date was the annual review or the date of original approval of the individual module. Records must demonstrate that a review occurs at least once each calendar year, with intervals not to exceed 15 months between consecutive reviews. Operators are expected to identify improvements, or document that no improvements are necessary.

PSE Response:

PSE Gas Control Training Manual will be updated to include a revision date by end of January 2022. The team will also add the existing change log into the manual and update dates on pages that have been revised.

We trust the information provided is responsive to the findings of the UTC inspection. PSE is committed to constructing, operating, and maintaining a safe gas pipeline system.

Sincerely,

DocuSigned by:

Harry Shapiro

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Harry Shapiro
Director, Gas Operations

Cc: Dan Koch, Vice President, Operations
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