



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

901 Locust Street, Suite 480
Kansas City, MO 64106

NOTICE OF AMENDMENT

VIA ELECTRONIC MAIL TO: stan.horton@bwpipelines.com, dick.keyser@bwpipelines.com

April 9, 2021

Stanley C. Horton
President, CEO
Texas Gas Transmission, LLC
9 Greenway Plaza, Suite 2800
Houston, TX 77066

CPF 3-2021-018-NOA

Dear Mr. Horton:

From June 15 through June 19, 2020, a representative of the Pipeline and Hazardous Materials Safety Administration (PHMSA) pursuant to Chapter 601 of 49 United States Code (U.S.C.) inspected your subsidiary, Texas Gas Transmission, LLC's (Texas Gas), Control Room Management Program procedures and records in Owensboro, KY. Texas Gas Transmission is the primary for the CRM Safety Program Relationship which supports the following OPID's: **31278 Gulf South Pipeline Company, LLC, 39210 Boardwalk Storage Company, LLC, 39470 Louisiana Energy and Power Authority.** The inspection was conducted remotely.

This Notice is in response to PHMSA's Control Room Management (CRM) Initiative, which is a national level program that includes inspectors from every region. As a result, you may have received this Notice from a different Regional Director than typical because the CRM Initiative inspections are currently separate from the standard inspection program. Notices and correspondence from other types of inspections will remain unchanged.

On the basis of the inspection, PHMSA has identified the apparent inadequacies found within Texas Gas's plans or procedures, as described below:

1. § 192.631 Control room management.

(a) General.

(1) This section applies to each operator of a pipeline facility with a controller working in a control room who monitors and controls all or part of a pipeline facility through a SCADA system. Each operator must have and follow written control room management procedures that implement the requirements of this section, except that for each control room where an operator's activities are limited to either or both of:

(i) Distribution with less than 250,000 services, or

(ii) Transmission without a compressor station, the operator must have and follow written procedures that implement only paragraphs (d) (regarding fatigue), (i) (regarding compliance validation), and (j) (regarding compliance and deviations) of this section.

Texas Gas's Control Room Management (CRM) procedure is inadequate because it does not state the criteria or process for how Texas Gas determines which facilities are control rooms, and which of those facilities in turn are required to follow written control room management procedures that implement the requirements of this section. In its CRM procedure, Texas Gas only provided a simple statement of which locations are control rooms, but no criteria by which the control rooms are identified. There are many facilities that may have the equipment and personnel that may have the ability to control the pipeline. For example, storage field or compressor station SCADA operator desks and Human Machine Interface (HMI's). These facilities need to be assessed using some established criteria and determined whether or not they are control rooms. The process should provide a consistent method to evaluate all facilities as well as clearly communicate which are control rooms and need to follow written control room management procedures that implement the requirements of this section.

The CRM procedure must be amended to provide a process to evaluate facilities and determine which facilities are control rooms subject to the requirements of this section.

2. § 192.631 Control room management.

(a)

(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: 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;

Texas Gas's CRM procedure is inadequate because it failed to properly define the roles and responsibilities of a controller during normal, abnormal, and emergency operating conditions. The definitions of the various positions in the control room do not align with the requirements of this section. Texas Gas employs two controllers on duty at any given time, but upon questioning, it was unable to clarify which of the two controller has the authority to make decisions and take actions during normal operations. Also, there is not defined criteria or an assessment process to determine competency in fundamental or functional knowledge, which includes the controller's prompt and appropriate response to operating conditions.

It does state in section 3.3 that, "the Gas Controller III and Senior Gas Controller Positions can serve as the Primary Controller with operator qualifications (OQ) and fundamental knowledge of the applicable Boardwalk pipeline system." Also, in section 3.2 it states that, "an operator qualified Gas Controller with a Level II designation can serve as a Primary Controller ... with sufficient functional knowledge to respond to abnormal and emergency operating conditions." The CRM procedure uses the words "fundamental" and "functional" synonymously, yet fails to provide a definition of either. Texas Gas's practice is to qualify the controllers in three identified covered tasks early in the training and development process. Even with the OQ successfully achieved, Texas Gas does not consider the individual competent to operate the system, alone, without supervision or direction of a Primary or higher level controller.

The Gas Controller I and Gas Controller II (GCI, GC II) positions are within the controller promotional sequence to Primary Controller. The definition of a controller from BWP's CRM procedure is, "A qualified individual who remotely monitors and controls the safety-related operations of a pipeline facility via a SCADA System from a Control Room, and who has operational authority and accountability for the remote operational functions of the pipeline facility." A Primary Controller is defined as, "A qualified Controller designated to be responsible for operational control and monitoring of BWP assets when on shift." Along with these roles, is a Secondary Controller, but there is no definition for this role. There is also Gas Control Management personnel who are defined to be, "Director and Managers of Gas Control with established operator qualifications and functional knowledge of the applicable Boardwalk pipeline system." There are no definitions for Controller I or Controller II. In Section 3.2, the Controller I and II Responsibilities state that they, "serve in a junior role while obtaining operator qualifications and specific functional knowledge of the applicable Boardwalk pipeline system. Controllers with Level I and II designations will be assigned as a Secondary Controller to assist the Primary Controller." Deciphering the definitions and comparing/contrasting them along with the oral description of Roles and Responsibilities as provided by Texas Gas employees during the inspection, it becomes evident that the language of the procedure is ambiguous and creates a lack of clarity among Texas Gas personnel.

The intent of Texas Gas's Control Room operations is that the Controller I and II have no authority to act alone, even if they are qualified and working in the control room. So, even though qualified, they are not functioning controllers. Controllers I and II must have fundamental

or functional knowledge in addition to OQ to be considered an independent functioning Controller. The definition of a Primary Controller does not include language that requires them to have fundamental or functional knowledge. During the inspection, Texas Gas personnel stated that to be a Primary Controller, and thus allowed to operate the console alone/independently, required OQ and foundational or functional knowledge. Texas Gas has no established process to define the criteria for, or assessment of, an individual's competence in this area.

The procedure must to be amended to define with clarity what is meant by the requirement of "fundamental knowledge of the applicable Boardwalk pipeline system" in order for a controller to operate the system without direction or supervision. It must also be amended to delineate the roles and responsibilities of each controller when two are working together on a console.

3. § 192.631 Control room management.

(a)

(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)

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

Texas Gas's CRM procedure is inadequate because it does not provide details of how those authorized to direct or supersede the technical actions of a controller are to implement their authority. The CRM procedure does not include the conditions or rules of engagement when the situation arises and a controller is superseded. Additionally, the CRM procedure does not include an avenue should the controller disagree with the actions the superseding personnel proposes to take. Finally, the CRM procedure does not include how the event should be communicated and documented.

The procedure must be amended to include the requisite conditions and rules of engagement for how and when personnel can implement the authority to supersede the technical actions of a controller, as well as the method of recording the event for those authorized to direct or supersede the technical actions of a controller.

4. § 192.631 Control room management.

(a)

(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;

Texas Gas's CRM procedure is inadequate because it does not clearly define the types of changes to the SCADA system(s) that constitute additions, expansions, or replacements. Section 4.3 of the CRM procedure merely rephrased the language of § 192.631(c). During the inspection, Texas Gas personnel articulated the various conditions they considered to mean add, expand or replace, but the CRM procedure did not establish these definitions or conditions in writing.

The procedure must be amended to provide the considerations and conditions that constitute additions, expansions, or replacement of a SCADA system.

5. § 192.631 Control room management.

(a)

(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)

(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;

Texas Gas's CRM procedure is inadequate because it did not clearly define the conditions for when field equipment is added or moved, and when other changes that affect pipeline safety are made to field equipment, or how to conduct a point-to-point (P2P) of SCADA displays.

While Texas Gas's CRM procedure does state the circumstances for when a P2P should be completed, it does not define how to complete the P2P test and associated documentation. The lack of a standard P2P template and instruction to complete the template became evident while reviewing various P2P records. There was no consistency in the process.

Section 4.4 of the CRM procedure is sparse in language and provides a reference to Texas Gas's 6602 Point-to-Point SCADA Verification Task List Information. Texas Gas's 6602 is a 5-step task/process that addresses, on a very high level, the requirements to complete a P2P. To assure the safe operation of pipeline systems, the CRM procedure for conducting and documenting the P2P should include the individuals conducting the verification test, point location, tag name, field end device name, HMI value/status, associated field value status, alarm limits, and the values/status when alarms are presented to the controller. It should also include verification that all screens presenting the values are correct, and that alarms presented with the right message, priority, priority color, and any other alarm characteristics, as well as any findings or malfunctions identified and how they are corrected. Texas Gas's CRM Plan and 6602 Point-to-Point SCADA Verification Task List Information provided no such guidance.

The procedure must be amended to provide instructions on how to complete, accurately document, and maintain records for P2P to verify 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.

6. § 192.631 Control room management.

(a)

(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)

(5) Establish and implement procedures for when a different controller assumes responsibility, including the content of information to be exchanged.

Texas Gas's CRM procedure is inadequate because it does not require the controllers to sign and date, with time, the shift change document for when a different controller assumes responsibility. It also does not provide direction on the electronic process for shift turnover that is now in place.

Texas Gas changed the shift turnover process from a Word Document to an online document using the new SCADA system. Texas Gas did not use a separate controller log and did not document the events and actions into the shift change log that is reviewed at shift turnover. Section 4.7 of Texas Gas's CRM procedure refers to Task List 6601-NG Shift Change-Over, each of which list items to be covered during shift change. In the word document (2017 & 2018), and the SCADA log (2019), Texas Gas identified these items as check boxes with no back up information as to what was discussed. If a box is checked next to a particular item, the assumption is that the topic was discussed, but there is no documentation or commentary regarding the specifics of what information was covered and passed along. The procedure does not require any documentation other than a verbal exchange. Documentation or written notation of what was shared and discussed is necessary to assure the safe operation of the pipeline system.

Texas Gas's CRM procedure also does not require a signature of the shift change for the outgoing controller. It does require the incoming controller to initial the document, but it does not require either controller to document the time the shift turnover occurred. The SCADA online form captures this, but it is still a manual entry via a select button and then entry of who were the shifting controllers. The procedure still appears to provide direction to the paper process and not the electronic process.

The Texas Gas CRM procedures must be amended to address the new online process, direct the controllers to complete the signature and dating process, and better capture topics that were discussed with sufficient detail for reference.

7. § 192.631 Control room management.

(a) *General.*

(1) This section applies to each operator of a pipeline facility with a controller working in a control room who monitors and controls all or part of a pipeline facility through a SCADA system. Each operator must have and follow written control room management procedures that implement the requirements of this section

Texas Gas's CRM procedure is inadequate because it does not include a process for implementing fatigue mitigation, and evaluating the effectiveness of that criteria, as required by § 192.631(d). Specifically, the factors listed in section 5.5 of the CRM procedure do not correspond to its 6630 Annual Fatigue Risk Management Procedure Review Task List; which provides as follows:

- Review any fatigue incidents to determine if a change to the Controller work schedule could improve fatigue mitigation.
- Review the overall effectiveness of the Fatigue Risk Management section of the CRM Plan and determine if a change will improve fatigue mitigation.

The second bullet point above, is the task and purpose of the review. Section 5.5 further identifies the following for review and consideration:

- Review all annually required fatigue awareness training for completion and if not completed, confirm that the training is scheduled for completion.
- The effectiveness of the *Fatigue Education and Training Program* will be shared with all Controllers.
- Controllers will also gauge the effectiveness of the training by which elements are missing from the training content and are encouraged to bring new training opportunities and suggestions into the *Fatigue Education and Training Program*.
- All pipeline accidents that cited Controller fatigue as a contributing factor will be reviewed for potential revisions to the *Fatigue Education and Training Program*.

While some of these review tasks will provide administrative information, the CRM plan fails to offer any criteria, metric, or suggested tools to make an effectiveness determination. Without this, it is not possible for Texas Gas to determine if the program is effective in mitigating fatigue.

The procedure must be amended to include specific criteria and process used in determining if the fatigue education/training program is effective.

8. § 192.631 Control room management.

(a)

(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;

Texas Gas's CRM procedure is inadequate because it fails to provide a functional process to review points that have had forced or manual values monthly. While stated as a requirement in section 6.5 of the CRM plan, the work tasks 6608 and 6621 do not include it in the process. It was stated, during the inspection, that they seldom force points or put them in manual mode, so there was little need to review this monthly. These work tasks provide the direction for the monthly compliance requirement of § 192.631(e)(2). The result of this inadequacy is that Texas Gas has no records to demonstrate compliance with the monthly review of points that have had forced or manual values.

The procedure needs to be amended to include a process to identify at least once each calendar month points affecting safety that have generated false alarms, or that have had forced or manual values for periods of time exceeding that required for associated maintenance or operating activities.

9. § 192.631 Control room management.

(a)

(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;

Texas Gas's CRM procedure is inadequate because it fails to provide clear criteria, metrics or factors that can be used to determine the effectiveness of the plan. The procedure and task list offers some considerations that may be employed, but lacks clarity and specificity as to how controllers are to respond to different alarms. Section 6.8 states, "Alarm management effectiveness metrics might include the number of alarms, clarity of alarm descriptions, how alarms are displayed or presented to Controllers, etc. Effectiveness could include, but not necessarily mean reduction in number of alarms or reduction in alarm volume." The corresponding referenced Task List 6610 Annual Alarm/Alert Management Plan Review provides 4 bullet points:

- Review the monthly alarm/alert audits for the current year to identify areas of improvement to minimize the frequency in the alarm/alert count;
- Review all the incident/accident reviews to determine if a change to Alarm Philosophy could improve the alarming process;
- Review monthly Alarm/Alert Counts per Console Report to determine the average number of alarms/alerts displayed on the Alarm/Alert Monitor screens; and

- Review the overall effectiveness of the Alarm Management Plan and determine if a change to the Plan or the Philosophy will improve controller response.

There are no instructions on how to perform the review so that the annual reviews provide consistency as well as relevant analysis and findings. There are no metrics to provide a standard to measure against. For example, the second bullet point suggests a review of all incident/accident reviews, but if there are none than how does that roll in to effective alarms? The third bullet point, above, states, “Review monthly Alarm/Alert Counts per Console Report to determine the average number of alarms/alerts displayed on the Alarm/Alert Monitor screens.” While this may be a reasonable item to review, there is no offer of what to do once “average” is determined; what is the measure to determine too high, too low, or acceptable.

Form 6610 is used to document the annual review. This form poses 4 questions with a simple YES or NO check box. The questions on Form 6610 are:

- Are there areas of improvement to minimize the frequency of alarm/alert count?
- Review all the incident/accident reviews. Would a change in the Alarm Philosophy improve the alarm process?
- Review of the monthly Alarm/Alert Counts per Control Report. What is the average number of alarms/alert displayed on the Alarm/Alert monitor screen?
- Review the overall effectiveness of the Alarm Management Plan, is a change to the Plan or Philosophy necessary to improve controller response? If so, list below.

Without criteria or methods to assess this information, the results risk being subjective with nothing to substantiate the outcome. The results of a study or review should be framed so the evidence directs the findings for effectiveness. There is nothing in Texas Gas’s process that lends itself to such a conclusion.

The procedure must be amended to better support a thorough evaluation to determine the effectiveness of the plan.

10. § 192.631 Control room management.

(a)

(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)

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

Texas Gas’s CRM procedure is inadequate because it fails to include provisions for addressing deficiencies identified through implementation of the requirements of the regulation. Specifically, section 6.9 of the CRM plan states that, “[d]eficiencies identified by implementing the requirements of Sections 6.5 through 6.9 are addressed and documented by System Optimization/Gas Control.” The procedure lacks a standard process for how controllers are to record will record corrective actions taken, and how this process will be managed.

The procedure must be amended to identify within the process how they will record deficiencies and where those records will be maintained.

11. § 192.631 Control room management.

(a)

(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:

Texas Gas's CRM procedure is inadequate because it does not require a review of the training program content, and the training content is not defined in the procedure. Section 9.10 of the CRM procedure rephrases the regulation, but does not offer any language on who, what, or how the training program content must be reviewed. It does refer to Texas Gas procedure 6616: *Annual Training Program Review Task List* in Appendix 5, and Form BWP-6616: *Training Program Review* for additional guidance. Three tasks are listed in BWP-6616:

- Review all the lessons learned to determine if a change or addition to Training Program could improve the Controller performance.
- Review the overall effectiveness of the Training Program and determine if a change is necessary to improve Controller performance.
- Determine if additional training is needed to assist the Controllers in performing their Roles and Responsibilities.

This task requires Texas Gas to “review and determine” and respond with a Yes or No, but lacks criteria or standards to evaluate the effectiveness of the training program content.

The procedure must be amended to include more details of what the review must include, as well as criteria to determine if the training program content is satisfactory, and if not, to identify potential improvements.

12. § 192.631 Control room management.

(a)

(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.

Texas Gas's CRM procedure is inadequate because it does not identify, by title or other means, those individuals who would reasonably be expected to operationally collaborates with control room personnel during normal, abnormal or emergency situations. Texas Gas's CRM procedure section 9.11, Team Training, Scenarios, Involvement, provides the following: "Gas Control Management personnel, individuals that have decision-making ability or the authority to influence operational control, must participate in all Control Room team training and exercises. Also, included in any trainings are personnel with the ability to direct or supersede the specific technical actions of a controller and employees that interact with controllers either remotely or face-to-face." This statement provides guidance for identification of the individuals or job titles that is identified in the language as "other individuals". The regulation requires the operator to define those "who would reasonably be expected to operationally collaborate with controllers (control room personnel) during normal, abnormal or emergency situations." The expectation is to use this guidance to identify either by title or by name, those who meet the definition and include that in the procedure.

The procedure must be amended to identify, with greater specificity, those who can reasonably be expected to operationally collaborate with control room personnel during normal, abnormal or emergency situations.

Response to this Notice

This Notice is provided pursuant to 49 U.S.C. § 60108(a) and 49 C.F.R. § 190.206. Enclosed as part of this Notice is a document entitled *Response Options for Pipeline Operators in Enforcement Proceedings*. Please refer to this document and note the response options. Be advised that all material you submit in response to this enforcement action is subject to being made publicly available. If you believe that any portion of your responsive material qualifies for confidential treatment under 5 U.S.C. 552(b), along with the complete original document you must provide a second copy of the document with the portions you believe qualify for confidential treatment redacted and an explanation of why you believe the redacted information qualifies for confidential treatment under 5 U.S.C. 552(b).

Following the receipt of this Notice, you have 30 days to submit written comments, revised procedures, or a request for a hearing under § 190.211. If you do not respond within 30 days of receipt of this Notice, this constitutes a waiver of your right to contest the allegations in this Notice and authorizes the Associate Administrator for Pipeline Safety to find facts as alleged in this Notice without further notice to you and to issue an Order Directing Amendment. If your plans or procedures are found inadequate as alleged in this Notice, you may be ordered to amend your plans or procedures to correct the inadequacies (49 C.F.R. § 190.206). If you are not contesting this Notice, we propose that you submit your amended procedures to my office within 30 days of receipt of this Notice. This period may be extended by written request for good cause. Once the inadequacies identified herein have been addressed in your amended procedures, this enforcement action will be closed.

It is requested (not mandated) that Texas Gas-Boardwalk maintain documentation of the safety improvement costs associated with fulfilling this Notice of Amendment (preparation/revision of plans, procedures) and submit the total to Gregory A. Ochs, Director, Central Region, Pipeline and Hazardous Materials Safety Administration. In correspondence concerning this matter, please refer to **CPF 3-2021-018-M** and, for each document you submit, please provide a copy in electronic format whenever possible.

Sincerely,

Gregory A. Ochs
Director, Central Region, OPS
Pipeline and Hazardous Materials Safety Administration

Enclosure: *Response Options for Pipeline Operators in Compliance Proceedings*

cc: Richard Keyser, Sr. VP Operations dick.keyser@bwpipelines.com