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May 7, 2021

Mr. Gregory A. Ochs  
Director, Central Region, Office of Pipeline Safety  
Pipeline and Hazardous Materials Safety Administration  
901 Locust Street, Suite 480  
Kansas City, MO 64106

Re: CPF-3-3031-018-NOA  
Response from Texas Gas Transmission, LLC ("Texas Gas") to  
PHMSA's Notice of Amendment ("Notice")

Dear Mr. Ochs,

On April 9, 2021, the Pipeline and Hazardous Materials Safety Administration ("PHMSA") issued the above-referenced Notice in association with the inspection of Texas Gas's Control Room Management ("CRM") Program procedures and records in Owensboro, KY, conducted remotely from June 15 through June 19, 2020.

Texas Gas is not contesting the allegations in the Notice with respect to the proposed inadequacies found within Texas Gas's plans or procedures and has made revisions for each Item 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 has revised its Control Room Management Procedures - Task List 6603: Control Room Jurisdiction Evaluation and CRM Plan Section 1.2: Control Room Overview [§192.631(a)(2)] to read as follows:

**Task List 6603: Control Room Jurisdiction Evaluation**

Task List 6603: *Control Room Jurisdiction Evaluation* will be reviewed when new facilities that have the potential to be considered a control room are constructed or acquired by Boardwalk. Once the determination has been made on the jurisdictional status of the new facility a memorandum of the findings will be sent to Control Room Management.

- Do the employees of the facility use a SCADA system to monitor and control pipeline facilities?
  - o Reference: FAQ A.05 and FAQ A.06
- Do the employees of the facility operate station equipment outside of the defined station boundaries (fence lines or property/map boundaries)?
  - o Federal Register/Vol. 74, No.231/Thursday December 3, 2009 / Rules and Regulations 63317, FAQ A.20
- Are the employees of a facility responsible for monitoring a SCADA system and contacting others to initiate corrective actions?
  - o FAQ A.07 and 192.3
- Are the employees of a facility responsible for connected pipelines beyond the boundaries?
  - o FAQ A.20
- Distribution with less than 250,000 services (Natural Gas Only)?
  - o Federal Register/Vol. 74, No.231/Thursday December 3, 2009 / Rules and Regulations 63317, FAQ A.20
- Transmission with compression (Natural Gas Only)?
  - o Federal Register/Vol. 74, No.231/Thursday December 3, 2009 / Rules and Regulations 63317, FAQ A.20
- Gas Transmission or Hazardous Liquid?
- Is the facility a Control Room?

Documentation: Memorandum of findings

## **1.2 Control Room Overview [§192.631(a)(2)]**

The Control Room is located at the Boardwalk Office in Owensboro, Kentucky. The Backup Control Room is located at Wing Avenue Training Center in Owensboro, Kentucky.

Mainline and Storage Compressor Stations have what is often referred to as a “station control room” where Station Operators monitor facilities inside the fenced station and are not responsible for connected pipelines beyond the station boundary. These remote station control rooms are not authorized to make changes without confirmation from Gas Control. Station control rooms are not subject to PHMSA CRM regulations and the station operators are not considered to be “Controllers.” Even though Mainline and Storage Compressor Stations have an HMI system for OPP and to protect the health of the units, the station operators may monitor their units, but they do not control pipeline facilities.

As new facilities are constructed with station control rooms, **Manager, of Compliance Services (or designee) and Director of Gas Control (or designee)** will evaluate the facilities, monitoring, and remote control capabilities, to determine if the control room is a “station control room” or a control room subject to PHMSA CRM regulations. If determined that the control room is subject to PHMSA CRM regulations, then a CRM Plan will be implemented, or the control room will be incorporated into Boardwalk’s existing CRM Plan and will adhere to all established procedures. Refer to Task List 6603 Control Room Jurisdiction Evaluation.

The SCADA system is supported by an UPS backup power supply. In the event of an extended purchase power outage, an Emergency Generator is utilized until purchase power is restored. Access to the Control Room is by keycard only.

The Control Room is a separate room within the Gas Control work area. The access to the Boardwalk Control Room is through keycard only. There are three (3) consoles with five (5) monitors per Controller. The SCADA system includes screen displays for all PHMSA regulated natural gas pipelines, compressor stations, and meter stations owned or operated by Boardwalk.

The Control Room operations are manned 24 hours/day, 365 days per year, on a 12- hour shift rotation.

If there is an emergency which requires evacuation, the Controller will evacuate the location, drive to a safe location and follow the Boardwalk Event Response Plan (ERP).

**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 has revised its Control Room Management Procedures – CRM Plan Section 1.1: Roles and Responsibilities [§192.631(b)] to read as follows:

**3.1 Roles and Responsibilities [§192.631(b)]**

This Section describes the roles and responsibilities of Boardwalk Controllers and Gas Control Management during normal, abnormal, and emergency operating conditions. To provide for a Controller's prompt and appropriate response to operating conditions, this Section sets out each Controller's authority and responsibility to make decisions and to communicate with other Controllers.

In order to establish internal and external communication channels during abnormal and emergency operating conditions, the Receiving, Identifying, and Classifying Notices of Events by Control Room process flow chart and Event Classification and Response Action table from Boardwalk's Event Response Plan (ERP) address internal and external communications and are incorporated in this plan for reference in Appendix 1.

⇒ See Appendix 1: Receiving, Identifying, and Classifying Notices of Events by Control Room

A Primary Controller shall be designated to be responsible for operational control and monitoring of Boardwalk's assets for each shift/console. Secondary Controller(s) may work with a Primary Controller during each shift. The Secondary Controller will take direction from the Primary Controller and, if qualified and they will work together as a team. Communication between the Primary and Secondary Controllers working on the same console is critical for safe operations.

### 3.2 Controller I and II Responsibilities [§192.631(b)]

Controllers in the Controller I and II positions serve in a junior role while obtaining operator qualifications. Controllers with Level I and II designations will be assigned as a Secondary Controller to assist the Primary Controller. However, an operator qualified Controller with a Level II designation can serve as a Primary Controller with responsibility to operationally control and monitor Boardwalk's assets upon obtaining operator qualifications. A Controller I without operator qualifications is deemed an entry level position that has to take direct supervision from the Primary Controller.

The following responsibilities apply to the Controller I and II positions:

**Table 2-1: Controller I and II Responsibilities for Normal, Abnormal and Emergency Conditions**

| Secondary Responsibility                                                                                                                                                                                                                                                | Controller I and II |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Only accept directives and supersedence from Gas Control Management.                                                                                                                                                                                                    | N, A, E             |
| Monitor operating set points and flow patterns.                                                                                                                                                                                                                         | N, A, E             |
| Obtain approval of Controller III, Senior Controller, Lead Controller, and/or Gas Control Management prior to making operational changes during normal, abnormal, or emergency operations to effectuate desired volumetric and pressure conditions                      | N, A, E             |
| Monitor SCADA System alarms and alerts received throughout the pipeline system to maintain operations within limits established to protect pipeline integrity (i.e. Hi Hi pressure limits).                                                                             | N, A, E             |
| Capture significant operating events occurring during shift in the Shift Change-Over Notes and participate in run downs of the current system conditions at shift changes.                                                                                              | N, A, E             |
| Lockout the SCADA keyboard when:<br>Controller will be away from the console for more than 15 minutes<br>Controller exits the Control Room<br>Controller leaves console while a visitor is in the Control Room                                                          | N, A, E             |
| Make telephonic notification to the National Response Center (NRC) for incidents. In addition to NRC, contact Texas Railroad Commission (TRRC) for Texas intrastate facilities or Louisiana Department of Natural Resources (LDNR) for Louisiana intrastate facilities. | A, E                |
| Review ongoing and upcoming Gas Control Service Requests (GCSR) for scheduled and unscheduled facility outages impacting operating conditions.                                                                                                                          | N, A, E             |

Legend: Normal - N, Abnormal - A, Emergency - E

### 3.3 Controller III, Senior Controller, and Lead Controller Responsibilities [§192.631(b)]

Controllers in the Controller III, Senior Controller, and Lead Controller positions can serve as the Primary Controller with established operator qualifications. The following responsibilities apply:

**Table 2-2: Controller III, Senior Controller, and Lead Controller Responsibilities for Normal, Abnormal and Emergency Conditions**

| Primary Controller Responsibility                                                                                                                                                                                                                                                                                     | Controller III, Sr Controller, and Lead Controller |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Initiate immediate response actions. Empowered to act without supervisor approval in response to events requiring immediate attention to avoid potential personal harm and/or property damage (which would include isolating or shutting down Boardwalk operated facilities). Inform supervisor as soon as practical. | N, A, E                                            |
| Establish appropriate operating set points, excluding Hi Hi and Lo Lo limits maintained by Gas Control Management and flow patterns throughout the pipeline system to maintain effective dispatching.                                                                                                                 | N, A, E                                            |
| Make operational changes throughout the pipeline system to effectuate desired volumetric and pressure conditions.                                                                                                                                                                                                     | N, A, E                                            |
| Monitor SCADA system alarms and alerts received throughout the pipeline system to maintain operations within limits established to protect pipeline integrity (i.e., Hi Hi pressure limits).                                                                                                                          | N, A, E                                            |
| Capture significant operating events occurring during shift in the Shift Change-Over Notes and participate in run downs of the current system conditions at shift changes.                                                                                                                                            | N, A, E                                            |
| Lockout the SCADA keyboard when:<br>Controller will be away from the console for more than 15 minutes<br>Controller exits the Control Room<br>Controller leaves console while a visitor is in the Control Room                                                                                                        | N, A, E                                            |
| Before leaving console, Primary Controller must ensure all SCADA commands that have been initiated are fulfilled.<br><br>See Section 4.11 "Absence of Primary Controller"                                                                                                                                             | N, A, E                                            |
| Make telephonic notification to the National Response Center (NRC) for incidents. In addition to NRC, contact Texas Railroad Commission (TRRC) for Texas intrastate facilities or Louisiana Department of Natural Resources (LDNR) for Louisiana intrastate facilities.                                               | A, E                                               |
| Review ongoing and upcoming Gas Control Services Requests (GCSR) for scheduled and unscheduled facility outages impacting operating conditions.                                                                                                                                                                       | N, A, E                                            |

Legend: Normal - N, Abnormal - A, Emergency – E

### 3.4 Gas Control Management Responsibilities

Gas Control Management with established operator qualifications and knowledge of the applicable Boardwalk pipeline system have the authority to direct or supersede the specific technical actions of a Controller. Superseding a Controller's specific actions or lack of, can occur during normal, abnormal, and emergency conditions. When Gas Control Management supersedes and gives direction to a Controller, the specific actions will be documented in the appropriate Console's Shift Change-Over Notes. The following responsibilities apply:

**Table 2-3: Gas Control Management Responsibilities for Normal, Abnormal and Emergency Conditions**

| Responsibility                                                                                                                                                                                                                                                                                                    | Gas Control Management |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Assist Controllers with response to events requiring immediate attention to avoid potential safety issues, personal harm and/or property damage (which would include isolating or shutting down Boardwalk operated facilities).                                                                                   | N, A, E                |
| Establish appropriate operating set points, including Hi Hi and Lo Lo limits.                                                                                                                                                                                                                                     | N, A, E                |
| Review operational changes throughout the pipeline system to effectuate desired volumetric and pressure conditions.                                                                                                                                                                                               | N, A, E                |
| Monitor SCADA system alarms and alerts received throughout the pipeline system to maintain operations within limits established to protect pipeline integrity (i.e., Hi Hi limits).                                                                                                                               | N, A, E                |
| If replacing a Controller for an unexpected absence from the console, capture significant operating events occurring during shift in the Shift Change-Over Notes and participate in run downs of the current system conditions at shift changes.                                                                  | N, A, E                |
| If replacing a Controller for an unexpected absence from the console, lockout the SCADA keyboard when: <ul style="list-style-type: none"> <li>Away from the console for more than 15 minutes.</li> <li>Exiting the Control Room.</li> <li>Leaving console while a visitor is in the Control Room.</li> </ul>      | N, A, E                |
| If assisting or superseding a Controller, make telephonic notification to the National Response Center (NRC) for incidents. In addition to NRC, contact Texas Railroad Commission (TRRC) for Texas intrastate facilities or Louisiana Department of Natural Resources (LDNR) for Louisiana intrastate facilities. | A, E                   |
| Review ongoing and upcoming Gas Control Service Requests (GCSR) for scheduled and unscheduled facility outages impacting operating conditions.                                                                                                                                                                    | N, A, E                |

| Responsibility                                                                                                                                                                             | Gas Control Management |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Conduct various plan reviews for effectiveness and deficiencies. Any deficiencies found will be reviewed by Gas Control Management to determine a resolution to correct such deficiencies. | N, A, E                |

*Legend: Normal - N, Abnormal - A, Emergency - E*

**Note:** No person other than Gas Control Management may direct or supersede the specific technical actions of a Controller. Any requests to redirect a Controller must be made through Gas Control Management.

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 has revised its Control Room Management Procedures – Task List 6601: Shift Change-Over and CRM Plan Section 3.4: Gas Control Management Responsibilities to read as follows:

#### **Task List 6601-Shift Change-Over**

Outgoing Controller per console should:

- Verbally give the incoming Controller a complete run down of the current system conditions, any on-going AOCs, and any upcoming conditions affecting pipeline operations.
- Monitor and respond to alarms until change-over is complete. Review the current alarms for any critical/operational issues.
- Detail any restrictions or significant changes in operational set-ups that are documented in the electronic Shift Change-Over Notes.
- Complete the Shift Change-Over Notes by listing the outgoing Controllers as well as the incoming Primary and Secondary Controllers, capturing the date and time, and log off SCADA.

Incoming Controller per console should:

- Follow/read the previous shift's Change-Over Notes while receiving the verbal rundown. Request clarification on items discussed, if needed. Call Gas Control Management for additional clarification if still unsure.

- Start the Shift Change-Over Notes by listing the Primary and Secondary Controllers and capturing the date and time.
- Review White Board information, Shift Change-Over Notes since last worked, any emails from Gas Control Management, and all on-going outages.
- Follow-up on unresolved AOCs and alarms/alerts.
- If the Controller disagrees with the directive from a member of Gas Control Management, the Controller will document in the Shift Change-Over Notes.
- Request outgoing Controllers remain for assistance as needed if the pipeline system is experiencing an emergency operating condition until additional Control Room staff arrive.

Documentation: Electronic Gas Control Shift Change-Over Notes

### 3.4 Gas Control Management Responsibilities

Gas Control Management with established operator qualifications and knowledge of the applicable Boardwalk pipeline system have the authority to direct or supersede the specific technical actions of a Controller. Superseding of a Controller's specific actions or lack of, can occur during normal, abnormal, and emergency conditions. When a member of Gas Control Management supersedes and gives direction to a Controller, the specific actions will be documented in the appropriate Console's Shift Change-Over Notes. The following responsibilities apply:

**Table 3-1: Gas Control Management Responsibilities for Normal, Abnormal and Emergency Conditions**

| Responsibility                                                                                                                                                                                                                                   | Gas Control Management |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Assist Controllers with response to events requiring immediate attention to avoid potential safety issues, personal harm and/or property damage (which would include isolating or shutting down Boardwalk operated facilities).                  | N, A, E                |
| Establish appropriate operating set points, including Hi Hi and Lo Lo limits.                                                                                                                                                                    | N, A, E                |
| Review operational changes throughout the pipeline system to effectuate desired volumetric and pressure conditions.                                                                                                                              | N, A, E                |
| Monitor SCADA system alarms and alerts received throughout the pipeline system to maintain operations within limits established to protect pipeline integrity (i.e., Hi Hi limits).                                                              | N, A, E                |
| If replacing a Controller for an unexpected absence from the console, capture significant operating events occurring during shift in the Shift Change-Over Notes and participate in run downs of the current system conditions at shift changes. | N, A, E                |

| Responsibility                                                                                                                                                                                                                                                                                                     | Gas Control Management |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| If replacing a Controller for an unexpected absence from the console, lockout the SCADA keyboard when: <ul style="list-style-type: none"> <li>• Away from the console for more than 15 minutes.</li> <li>• Exiting the Control Room.</li> <li>• Leaving console while a visitor is in the Control Room.</li> </ul> | N, A, E                |
| If assisting or superseding a Controller, make telephonic notification to the National Response Center (NRC) for incidents. In addition to NRC, contact Texas Railroad Commission (TRRC) for Texas intrastate facilities or Louisiana Department of Natural Resources (LDNR) for Louisiana intrastate facilities.  | A, E                   |
| Review ongoing and upcoming Gas Control Service Requests (GCSR) for scheduled and unscheduled facility outages impacting operating conditions.                                                                                                                                                                     | N, A, E                |
| Conduct various plan reviews for effectiveness and deficiencies. Any deficiencies found will be reviewed by Gas Control Management to determine a resolution to correct such deficiencies.                                                                                                                         | N, A, E                |

Legend: Normal - N, Abnormal - A, Emergency - E

**Note:** No person other than Gas Control Management may direct or supersede the specific technical actions of a Controller. Any requests to redirect a Controller must be made through Gas Control Management.

**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 has revised its Control Room Management Procedures – CRM Plan Section 4.7: Pipeline SCADA Displays and API RP-1165 [§192.631(c)(1)] to read as follows:

**4.7 Pipeline SCADA Displays and API RP-1165 [§192.631(c)(1)]**

Sections 1, 4, 8, 9, 11.1, and 11.3 of API RP-1165 shall be implemented whenever a SCADA System is added, expanded or replaced after implementation of this plan, unless Boardwalk 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.

Routine upgrades or modifications of existing SCADA systems that do not impact display parameters, such as operating system, application software or hard drive upgrades do not necessarily require implementation of API RP 1165. However, changes that impact display parameters (such as display symbols, color palettes, or anything that affects the controller-machine interface) would require implementation of API RP 1165.

Boardwalk will consider the recommendations in PHMSA Advisory Bulletin (ADB-2003-09), "Potential Service Disruptions in Supervisory Control and Data Acquisition Systems" issued on December 7, 2003 (FR Doc. 03-31574) when performing upgrades, enhancements, maintenance, or replacement of the SCADA system.

When an upgrade, modification, or replacement of the SCADA system occurs, the IT SCADA group must document the upgrade in memorandum and email to Gas Control Management.

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 has revised its Control Room Management Procedures - Task List 6602: Point to Point SCADA Verification and CRM Plan Section 4.8: Point to Point Verification [§192.631(c)(2)] to read as follows:

**Task List 6602: Point to Point SCADA Verification**

- Field technician calls the SCADA Technician to verify all tags using the Controller's main or detail display.
- The SCADA Technician records the verbal verification process and will record the following on the checkout documentation: list all of the Boardwalk personnel involved conducting the point-to-point, the 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. The documentation should also include verification from all SCADA screens presenting correct values and alarms presented with the correct message, priority, color, and any other characteristic, as well as any findings or malfunctions identified in the test and how it was corrected.
- Test any set point tags added to ensure that changes initiated by Control Room match the value sent to the field and that applicable equipment operate properly. Record all pressures, safety-related alarms, other related alarms, and procedure results in the Point-to-Point checkout documentation.
- If a SCADA display is being created, modified, or moved with no change in field equipment, and a separate, unchanged main or detail display also contains the data being added, modified, or moved, use the unchanged display as verification that the data points being created or modified are set up correctly. Record all procedure results in the Point-to-Point checkout documentation.
- The MOC system in OMS will notify Controllers by email when the point-to-point process has been completed and closed.

Documentation:

- Point-to-Point checkout documentation (in the OMS Management of Change application)

**4.8 Point-to-Point Verification [§192.631(c)(2)]**

The process confirms that the data being measured or received in the field at the physical location corresponds with what is being sent to/from SCADA and is being correctly represented on SCADA displays. A point-to-point verification between SCADA data points and related Area equipment shall be conducted when:

- Area equipment is added, replaced, modified, or moved, and
- Other changes that affect pipeline safety are made to Area equipment or SCADA displays.
- Any calibration or change to field instruments require verification of alarm setpoints and alarm descriptions.

**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 has revised its Control Room Management Procedures - Task List 6601: NG Shift Change-Over Task List and CRM Plan Section 4.11: Shift Change-Over and Unexpected Absence from Console [§192.631(c)(5) and §192.631(b)(4)] to read as follows:

**Task List 6601: NG Shift Change-Over Task List**

Outgoing Controller per console should:

- Verbally give the incoming Controller a complete run down of the current system conditions, any on-going AOCs, and any upcoming conditions affecting pipeline operations.
- Monitor and respond to alarms until change-over is complete. Review the current alarms for any critical/operational issues.
- Detail any restrictions or significant changes in operational set-ups that are documented in the electronic Shift Change-Over Notes.
- Complete the Shift Change-Over Notes by listing the outgoing Controllers as well as the incoming Primary and Secondary Controllers, capturing the date and time, and log off SCADA.

Incoming Controller per console should:

- Follow/read the previous shift's Change-Over Notes while receiving the verbal rundown. Request clarification on items discussed, if needed. Call Gas Control Management for additional clarification if still unsure.
- Start the Shift Change-Over Notes by listing the Primary and Secondary Controllers and capturing the date and time.

- Review White Board information, Shift Change-Over Notes since last worked, any emails from Gas Control Management, and all on-going outages.
- Follow-up on unresolved AOCs and alarms/alerts.
- If the Controller disagrees with the directive from a member of Gas Control Management, the Controller will document in the Shift Change-Over Notes.

Request outgoing Controllers remain for assistance as needed if the pipeline system is experiencing an emergency operating condition until additional Control Room staff arrive.

Documentation: Electronic Gas Control Shift Change-Over Notes

#### **4.11 Shift Change-Over and Unexpected Absence from Console [§192.631(c)(5) and §192.631(b)(4)]**

At the change of each shift at least one outgoing Controller on each console shall brief the incoming Controller(s) for the same console on the current conditions and any upcoming events affecting the operation of the pipeline. Briefings shall also be conducted if Controllers are changed within the normally scheduled shift change times.

Issues to be covered at the shift change briefing will vary depending on system operations, time of year, and pipe conditions. Listed below are recommended, but not limited to, points of discussion that should be captured in the Shift Change-Over Notes throughout the shift:

- Abnormal Operating conditions
- Batching flows with listed locations
- Callouts with Boardwalk personnel
- Events or Incidents
- Imbalance makeup with listed locations
- General public phone calls
- Pig runs
- Pipeline configuration changes
- Valve testing
- Ongoing and upcoming maintenance
- Locations with pressure and/or volumetric restrictions
- Inclement Weather if on or near pipeline facilities
- Storage status
- SCADA communications concerns
- Horsepower utilization and changes
- Gas supply issues
- Interconnect issues
- Gas quality concerns
- Alarms
- Testing of backup SCADA systems or during real world scenario when transferring to the backup Control Room location is necessary

The Controller shall use electronic Shift Change-Over Notes to document issues and used for the shift change briefings. and the Shift Change-Over Notes shall be maintained at the appropriate location for five (5) years.

Shift change-over shall take place at each normally scheduled shift change. There will be overlap at shift change to accommodate the adequate transfer of information from one shift to the next.

At the end of a shift, the outgoing Controller shall capture the date and time within the Shift Change-Over Notes as well as the incoming Controller that is assuming responsibility of the console.

Shift change-over updates should take place each time a Controller is away from the console for more than 30 minutes of continuous time and additional Shift change-over should be performed when the original Controller returns to the console.

**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 has revised its Control Room Management Procedures - Task List 6630: Annual Fatigue Risk Management Procedure Review and CRM Plan Section 5.6: Fatigue Risk Management Team to read as follows:

***Task List 6630 Annual Fatigue Risk Management Procedure Review***

- Review at intervals not exceeding 15 months, but at least once each calendar year.
- Metrics to be used evaluate the effectiveness shall consist of the following:
  - o Fatigue Mitigation training was completed by all Controllers on time.
  - o No incidents where fatigue was a contributing factor.
  - o Ensure fatigue training is relevant to Controllers' job duties.
  - o Ensure monthly Fatigue newsletter is available to Controllers.
  - o Controllers have stated that the fatigue training is adequate.
- Share results of review with Controllers.

Documentation: BWP-6630: *Annual Fatigue Risk Management Plan Review*

***5.6 Fatigue Risk Management Team***

The Fatigue Risk Management team will consist of:

- Director, Gas Control
- Manager(s), Gas Control

A team member shall conduct a review of the Fatigue Risk Management Procedure to determine if it is effective and make changes when necessary each calendar year but at intervals not to exceed 15 months.

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*.

- ⇒ See 6630: *Annual Fatigue Risk Management Procedure Review Task List* in Appendix 5  
⇒ See Form BWP-6630: *Annual Fatigue Risk Management Plan Review*

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) . . . .**

**(1) 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 has revised its Control Room Management Procedures - Task List 6608: Monthly Alarm/Alert Point Audit, Task List 6621: Safety Related Alarm Review and CRM Plan Section 6.5 Monthly Alarm/Alert Review to read as follows:

**Task List 6608: Monthly Alarm/Alert Point Audit**

- Top Alarms 6 Month Report – Review monthly to determine if there are any devices or signals that are consistently alarming. Determine if the alarm/alert count can be reduced or if there is a resolution to stop the trigger for the alarms/alerts. Document any changes or notifications.
- Alarm/Alert Limit Changes Report – Review monthly to determine if any of the devices or signals have been changed. Document any changes or notifications.
- Inhibited Alarm/Alert Report and the Off-Scan Report – Review monthly to determine if any devices or signals or Flow Computers have been taken off scan. Document any changes or notifications. Control Rooms will document Off-Scan and Inhibited Alarm reports on their respective SharePoint sites.
- Manual Entry Report – Review monthly to determine if any devices or signals have had a manual entry to prevent a nuisance alert or to correct line pack. Document any changes or notifications.
- False alarms will be corrected at the time of occurrence and not wait until the monthly review. False alarms and the correction will be recorded in the Shift Change-Over Notes.

Documentation:

- Top Alarms 6 Month Report
- Alarm/Alert Limit Changes Report
- Inhibited Alarm/Alert Report
- Off-Scan Report
- Manual Entry Report
- Shift Change-Over Notes

**Task List 6621: Safety Related Alarm Review**

- Each month prepare the Top Alarms (Safety/Critical Alarms - Fire, ESD, MOP/MAOP Exceedance, Relief Valve Communications failure, etc.) 6 Month Report listing the most frequent Safety Related Alarms for the current month, including five months prior.

- Forced or manually entered values and false alarms for the month will also be reviewed for any given safety related alarms for periods of time exceeding that required for associated maintenance or operating activities.
  - o Indicate the alarm and number of times it occurred during the month and sort by occurrence and location.
  - o NG: Send to each Regional VP, VP Field Operations, and Director Asset Reliability for review.
  - o HL: Send to Operation Managers and VP Operations and Engineering.
- File documentation of any changes to alarms from Area Locations with the Monthly Alarm report. Where appropriate, use the MOC process to document changes made to alarms.
- Communicate with the Area Location when reoccurring alarms are generated during the month. After the Area Location investigates and documents the cause of the alarm, file the documentation.
- File documentation from Area Locations when routine testing or calibrating of devices occurs that generate alarms. The documentation should contain the alarm name and date and times these alarms were generated. (The Control Room and Field Operations have a bi-annual meeting and go over a 6-month rolling alarm summary. For example: Testing a MLBV, Control Room will document in shift notes which can also be viewed from SCADA reports.)
- Investigate any Safety Related Alarm that occurs at an Area Location and is not received in Control Room. Document and file the investigation.
- Review the process, changes, and progress made to reduce the reoccurring alarms, and identify any alarm priority issues in a meeting with Operation Managers (HL), VP Operations and Engineering (HL), and IT SCADA twice each calendar year, not to exceed 7 ½ months.

Documentation: Top Alarms 6 Month Report and Monthly Alarm Report

#### **6.5 Monthly Alarm/Alert Review [§192.631(e)(2)]**

Director, Gas Control (or designee) shall identify, at least once each month, points affecting safety in the SCADA system that have been taken off scan, 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. False alarms will be corrected at the time of occurrence and not wait until the monthly review. The Controller will record false alarms and the correction in the Shift Change-Over Notes.

Results shall be documented and maintained for a period of three years.

- ⇒ See 6608: Monthly Alarm/Alert Point Audit Task List in Appendix 5
- ⇒ See 6621: Safety Related Alarm Review Task List in Appendix 5

#### **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 has revised its Control Room Management Procedures - Task List 6610: Annual Alarm-Alert Management Plan Review to read as follows:

- Review the monthly Top Alarms 6-month reports for the current year to identify areas of improvement to minimize the frequency in the alarm/alert count.
- Review the email responses from Operations, Reliability, and Technical Services after bi-annual meetings to discuss reducing reoccurring alarm/alerts
- Review all of the incident/accident reviews to determine if a change to Alarm Philosophy could improve the alarming process.
- Review monthly Top Alarms 6-month reports per Console to determine the average number of alarms/alerts displayed on the Alarm/Alert Monitor screens.
- Review the overall effectiveness of the Alarm Management Plan and determine if a change to the Plan or the Philosophy will improve Controller response.

Documentation: BWP-6610: *Alarm Management Plan Review* and Top Alarms 6-month report

- 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 has revised its Control Room Management Procedures – CRM Plan Section 6.9: Alarm Management Plan Deficiencies [§192.631(e)(6)] to read as follows:

**6.9 Alarm Management Plan Deficiencies [§192.631(e)(6)]**

Deficiencies identified by implementing the requirements of Sections 6.5 through 6.9 are addressed and documented by Gas Control Management. Records of deficiencies and corrective actions shall be kept for three years.

Boardwalk will promptly correct specific issues commensurate with their importance to safety. System Optimization/Gas Control should maintain an itemized list of deficiencies and their date of discovery, the corrective action to be taken, and the completion date (or schedule) for corrective actions. The list of deficiencies will be documented on from BWP-66XX: *Alarm Management Deficiencies*.

The documentation should also record the basis for the selection and scheduling of corrective action. The alarm management plan should include provisions to analyze its specific deficiencies to identify root cause, common cause, trends, etc., that are indicative of systemic deficiencies that need to be identified and corrected.

- ⇒ See 6610: Annual Alarm/Alert Management Plan Review Task List in Appendix 5
- ⇒ See Form BWP-6610: Annual Alarm Management Plan Review

**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 has revised its Control Room Management Procedures – CRM Plan Section 9.10: Training Program Review to read as follows.

**9.10 Training Program Review [§192.631(h)]**

The training program for Controllers shall be reviewed each calendar year, but at intervals not to exceed 15 months. This review must be documented in any form and maintained by System Optimization/Gas Control for three years.

The following training categories and items will be reviewed during the annual review and areas needing improvement will be identified and addressed by Control Room Management:

- Responding to abnormal operating conditions likely to occur simultaneously or in sequence;
- Use of a computerized simulator or non-computerized (tabletop) method for training Controllers to recognize abnormal operating conditions;
- Training Controllers on their responsibilities for communication under the operator's emergency response procedures;
- Training that will provide a Controller a working knowledge of the pipeline system, especially during the development of abnormal operating conditions;
- 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
- 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.
- A working knowledge of the pipeline system, including the following:
  - o Practical knowledge of how fluid dynamics, electrical power, and communications could impact operations (for communications, see 3.3 above);
  - o Information about how pressure and flow in all pipeline segments are impacted by control actions;
  - o Information about flexibility and limitations at inlet points, mainline valves, stations, and delivery points; and
  - o MAOP and any imposed lower pressures on all pipeline segments within the Controller's area of responsibilities.
- All reasonably foreseeable operational configurations (setups) in its training program, including those setups that are repeated on an infrequent basis (possibly quarterly or greater intervals). Examples of infrequent operations include the following:
  - o Seasonal operating parameters;
  - o Start-up and shutdown;
  - o Line reversals;
  - o Combining pipelines (through valve operation) to operate in common rather than separately;

- o Bleed valve operations;
    - o Power-loss failure modes;
    - o Slack line conditions;
    - o Purging; and
    - o Running in-line inspection tools.
  - A list of foreseeable operating scenarios that is more likely to cause an AOC, simultaneous AOCs, or multiple AOCs in sequence for training Controllers on how to recognize and handle them. Section 192.631(h)(2) requires that the training program for AOCs include either tabletop exercises or computerized simulation methods.
  - A review of historical alarm logs to identify appropriate scenarios for training.
  - Accidents, incidents, near misses, non-reportable events (e.g., small leaks, audit findings), and circumstances that could better inform and better train Controllers to safely control the pipeline and recognize and correctly respond to abnormal, unusual, or emergency conditions as defined in 5 above. Events in which Controllers contributed to the event are important to avoid recurrence of Controller mistakes. Also, proper Controller reaction is an important aspect in avoiding recurrence of other types of incidents.
  - Provisions for recordkeeping.
  - Lessons learned from field equipment deficiencies that could affect control room operations. Which could include the following:
    - o Instrumentation that is out of calibration, resulting in a false alarm or inaccurate display of operational parameters (e.g., pressure, flow);
    - o Valve limit switches that provide incorrect information on valve status;
    - o Inappropriate setting for relief equipment compared to alarm set points; and
    - o Discovery of a mainline valve previously unknown to the Controller.
    - o The responsibilities for communication, including the operator's communications plan and emergency plan requirements.
    - o Training and exercises that include Controllers and other individuals, defined by the operator, who would operationally collaborate with control room personnel during normal, abnormal, or emergency situations (§192.631(h)(6)).
- ⇒ See 6616: *Annual Training Program Review Task List* in Appendix 5
- ⇒ See Form BWP-6616: *Training Program Review*

**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 has revised its Control Room Management Procedures - CRM Plan Section 9.11: Team Training, Scenarios, Involvement has been revised as follows:

**9.11 Team Training, Scenarios, Involvement [§192.631(h)(6)]**

Controllers and Gas Control Management must participate not only in individual trainings such as computer-based training and Operator Qualifications but must participate in team-based training and exercises.

Gas Control Management personnel and individuals that have decision-making ability and the authority to supersede specific technical actions of a Controller, must participate in all Control Room team training and exercises. Also included in any trainings are personnel with the ability to collaborate with Controllers either remotely or face-to-face.

Individuals that may be included in Team Training, but not be limited to:

- Area Manager
- Regional Vice President
- Manager/Director System Planning
- Manager/Director Operations Analysis

Team training should emphasize the building of core skills that will help not only during abnormal and emergency situations but during normal operations as well. The skills to be focused on during team trainings will include teamwork, communication, situational awareness, decision-making, leadership, professionalism, understanding roles and responsibilities, recognition and appropriate responses to emergencies, resolving discrepancies, error diagnostics and management, relevant procedures, problem solving, and numerous other soft skills that are improved during group exercises.

The training should address the role of Gas Control Management and understanding the authority and limitations of operational decisions by Boardwalk leadership and executive management. Team trainings should incorporate scenarios when the situation arises for Gas Control Management to step in and direct or supersede the specific technical actions of a Controller and influences changes on the pipeline systems. Team training scenarios should change periodically from minimal realistic scenarios to levels of increased complexity. The goal of the scenario should be to challenge the decision-making skills of the entire team and not rely on one individual. Scenarios can include everything from the lessons learned, to actual events, and even incorporate actual events that may have occurred at other companies with other pipeline operators.

One fully qualified Controller is required to participate in the annual team training scenario and exercise at a minimum.

All exercises, team trainings, interim team activities, discussions of actual or possible event scenarios, post-operational team critiques of abnormal operations or accidents, or any other Controller based activity will be reviewed with all remaining Controllers that were not permitted to attend the scenario due to shift schedules and hours of service sleep requirements.

Review all notes and comments from the drill scenario, whether positive or negative, from the exercise participants. Determine if the scenario exercise was successful and, if not, take actions to improve the next scenario exercise. Identify and assign any action items, if needed, such as further training, improved equipment, or any policy and procedure revisions.

Full Gas Control Management and Controller Team training shall occur each calendar year, but at intervals not to exceed 15 months, utilizing Form 3000-45: *Control Room Management Emergency Response Scenario and Training Record*.

After the Team Training has been completed, Gas Control Management shall request Manager, Compliance Services to upload Team Training to LMS for review by all remaining Controllers that did not attend the scenario exercise.

Gregory A. Ochs  
Director, Central Region, Office of Pipeline Safety  
Pipeline and Hazardous Materials Safety Administration  
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Control Room Directives Training shall occur each calendar year, but not to exceed 15 months, to employees that may interact with the Control Room during normal, abnormal, and emergency operating conditions to outline who has the authority to direct or supersede a Controller.

⇒ See Form 3000-45: Control Room Management Emergency Response Scenario and Training Record

Through the actions specified in this letter, Texas Gas is fulfilling the requirements of the Notice. If you have any questions concerning the information contained in this response, please do not hesitate to contact me or Tina Baker, Manager, Compliance Services.

Respectfully Submitted,

Tony G. Rizk, P.E.  
Vice President, Technical Services

Cc: Ms. Tina Baker, Boardwalk Pipelines