June 5, 2024

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

Subject: 32024039-NOA

Dear Ochs,

I am respectfully responding to your letter dated May 8, 2024, in which you requested amendments to the stated issues listed in the Notice of Amendment: 32024039-NOA. NGL Supply Terminal Company, LLC (NGL) is not contesting the Notice, and is submitting this letter addressing the following alleged inadequacies with amended procedures.

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

1. **§ 195.402 Procedural manual for operations, maintenance, and emergencies.**

(a) . . . .
(d) *Abnormal operation.* The manual required by paragraph (a) of this section must include procedures for the following to provide safety when operating design limits have been exceeded:
(1) Responding to, investigating, and correcting the cause of:
(i) Unintended closure of valves or shutdowns;
(ii) Increase or decrease in pressure or flow rate outside normal operating limits;
(iii) Loss of communications;
(iv) Operation of any safety device;
(v) Any other malfunction of a component, deviation from normal operation, or personnel error which could cause a hazard to persons or property.

NGL 's O&M Procedure, section 13, entitled "Abnormal Operations," dated July 1, 2022, was not adequate because it did not require field personnel to call the control room when operating design limits were exceeded, as prescribed in § 195.402(d)(1)(i)-(v). Section 13 directed field personnel to call the operations supervisor, who was also not instructed to call the control room. Information needs to flow to the controller to provide for a controller's prompt and appropriate response to operating conditions, even if the controller is not the first to detect the condition. Section 195.402(c)(15) requires an operator to implement the applicable control room management procedures required by § 195.446.

The O&M Procedure section 13 needs to be amended to include the requirement for field personnel to contact the control room upon the discovery of an abnormal operation, as defined by § 195.402(d)(1)(i)-(v).

NGL 's Response:
NGLEP accepts the findings above and has amended the O&M to require notification to the control room upon the discovery of an abnormal operation.

2. § 195.446 Control room management.

(a) *General*. 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….

NGL 's "NGL Crude Terminals Control Centers Control Room Management Plan," Revision 3, Issued May 9, 2023 (CRM Plan), was not adequate to provide a process for control room determination. Section 1.7.4 of the CRM Plan only provided a statement of where the control center is located. The procedure needs to consider all locations where there is a SCADA system that can monitor and control jurisdictional pipeline facilities.

The procedure needs to be amended to provide a process that evaluates each location where there is a SCADA system that can monitor and control jurisdictional pipeline facilities with criteria to support determination of control rooms.

NGL's Response:

NGL accepts the findings above and NGL has amended section 1.7.4 with the following language and table for evaluation of any/all remote-control operations.

#2 Amended Procedure

1.7.4 Control Room Applicability

Whenever NGL acquires new assets / control rooms, or modifies existing assets, NGL must conduct an applicability study to determine if the assets are governed by Control Room Management Regulations. The assessment consists of a review of the pipeline operations to determine if 49 CFR 195.446 Control Room Management Regulations apply. NGL may conduct the applicability study using SME personnel or third-party vendors to complete the study. NGL has developed the following table below to aid in the determination of Control Room Management Applicability. Not all 'yes' or 'no' answers indicate the facility is a control room subject to Part 195. These answers aid NGL personnel in determining the regulatory status but are not in themselves the sole determining factor.

System Evaluated	
• Does the Operator have remote control capabilities via PLCs, RTUs, HMI Systems or other devices that may have remote access?	☒ Yes ☐ No

• Are there PLCs or RTUs that can be used by individuals to command equipment and monitor operations outside of a given fenced location? These devices may or may not have existing defined control rooms associated with them but may fall under CRM requirements depending on utilization of these devices. These devices would be considered jurisdictional if:
  • The device is utilized to operate equipment or
  • The device is utilized to monitor operations.
	☒ Yes
	☐ No

• Does the Operator have a Center Staffed with personnel to monitor a SCADA / DCS system?	☒ Yes ☐ No

• Does the operator have controllers (individuals using computer-type displays and keyboard/mouse, etc.) using a SCADA system with assigned operational authority and responsibility to monitor and control regulated pipeline facilities?	☒ Yes ☐ No
• Does the regulated pipeline have any data, alarms, or information being monitored in the Control Center?	☒ Yes ☐ No
• Does the Operator have remote control capabilities?	☒ Yes ☐ No
• Does the Control Center Monitor Data and direct field technicians to manipulate valves or direct field technicians to respond to the pipeline operations to take corrective actions?	☒ Yes ☐ No
• Does the Control Center exclusively monitor and/or control station equipment that is completely within the fenced boundary of the local facility and not associated with a regulated pipeline?	☐ Yes ☒ No
• Are all control capabilities local and entirely within the bounds of the facility?	☐ Yes ☒ No
• Exemptions (192 only): Is the Control Room limited to either or both of the following: a. Distribution with less than 250,000 services, or b. 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.	☐ Yes ☐ No ☒ N/A
Determination: NGL Cushing Control Room is utilized by NGL to monitor and control the following regulated pipelines: NGL Crude Terminals Grand Mesa Terminal, NGL Crude Terminals Houma Terminal, NGL Crude Terminals Cushing Terminal and NGL Supply Ambassador Terminal. This is considered a regulated control room under CFR 195.446. Any and all equipment is to be ONLY controlled by NGL qualified controllers through the use of SCADA from the NGL Cushing Control Room and/or by way of field personnel dispatched by qualified NGL controllers. All field personnel will keep NGL qualified controllers informed prior to performing any actions that may affect the pipeline system.	

3. § 195.446 Control room management.

(a) *General*. 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….
(b) ….
(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 API RP 1165 (incorporated by reference, *see* § 195.3) whenever a SCADA system is added, expanded or replaced, unless the operator demonstrates that certain provisions of API RP 1165 are not practical for the SCADA system used;

NGL 's CRM Plan was not adequate to clearly define when a SCADA system is added, expanded, or replaced to appropriately ensure API RP 1165 is implemented. Section 3.1 stated, "latest approved version of API 1165 (latest approved version)." The version incorporated by reference in the regulations is identified in § 195.3(b)(9) as the First Edition, January 2007.
Section 6.1.4, "System/Processes Undergoing Change," of the CRM Plan identified details on changes that require implementation of the MOC process, which included (1) Control System Changes and (2) SCADA System Changes. While many of these types of changes may relate to addition, expansion, or replacement, as addressed in § 194.446(c)(1), these procedure did not address when API RP 1165 must be implemented. Additionally, there was no tie between section 3 and section 6 of the CRM Plan to make sure API RP 1165 will be implemented.

The procedure needs to be amended to define what a SCADA system addition, expansion, and replacement means to the operator. The procedure also needs to include the requirement to document the deviation if certain provisions of API RP 1165 are not practical for the SCADA system. The procedure needs to make the tie between section 3 and section 6 of the CRM Plan, through reference between the MOC process and the intended API RP 1165 standard for compliance. The correct API RP 1165 version needs to be referenced.

NGL Response:

NGL accepts the findings above and NGL has amended this procedure as shown below. Each term has been defined

#3 Amended Procedure

3.1.1 Display Standards Scope

Requirement

- 195.446(c)(1) - Implement API RP 1165 (incorporated by reference, see § 195.3) whenever a SCADA system is added, expanded or replaced, unless the operator demonstrates that certain provisions of API RP 1165 are not practical for the SCADA system used;

Responsibilities

SCADA Technician or designee
1. Responsible for conducting and documenting all changes made to SCADA System.
2. Ensure all waivers are documented.
3. Ensure upgrades / changes to SCADA systems do not cause safety conditions.

General

API RP 1165 shall be implemented whenever the SCADA system is added, expanded or replaced (as defined below), after implementation of this Control Room Management Plan. Any deviations from implementation of required sections shall be documented with commentary demonstrating impracticality for the SCADA system used. This applies to both primary and backup Control Rooms.

Additions

Additions may include but are not limited to adding a new console, alarms, audibles, setpoints or user controllable field devices to existing facility equipment. Additionally, this could include adding servers that could impact regulated facilities.

Expansions

Expansion may include but are not limited to adding alarms, audibles, setpoints for new connections or new construction governed by CRM regulations.

Replacements

Installation of software or changing out the HMI that would constitute an overhaul in procedures regarding SCADA Design in the Alarm Management Plan would be considered a replacement. Additionally, this could be upgrades / changes to SCADA hardware or software that impact API 1165 requirements.

SCADA Display Standards

The SCADA Technician or designee shall utilize the following Sections of API 1165 during the expansion and/or replacing all or parts of the SCADA system(s):

- Section 1 - Scope
- Section 2 – References
- Section 3 – Definitions
- Section 4 – Human Factors Engineering Considerations in Display Design
- Section 5 – Display Hardware
- Section 6 – Display layout and Organization
- Section 7 – Display Navigation
- Section 8 – Object Characteristics
- Section 9 – Object Dynamics

- Section 10 – Control and Selection Techniques
- Section 11 – Administration

Waivers

Some of the requirements may be waived if it is determined that the API RP 1165 requirements are not practical to implement. If a waiver is required, it will be documented for why API RP 1165 is not appropriate for a given system change. Examples of reasons why a waiver may be needed include but is not limited to:

- Pipeline Control Center is a combination of several different SCADA Systems,
- SCADA system does not have the developer tools necessary to implement the recommended practices,
- Existing display techniques that bridge over into unique operating philosophies.
- Routine upgrades such as upgrading to a newer version of SCADA software or upgrading disc drive if displays are not impacted. Changes that will impact display parameters will require AP RP 1165 implementation.

Management of Change (MOC)

The Control Room Manager or designee shall determine if an MOC is required for display changes. Any documentation will be maintained within NGL 's internal MOC database.

Documentation

The SCADA Technician or designee shall document compliance with API 1165 and justifications of waivers, as needed, on the API 1165 Checklist Form. These records shall be retained in accordance with applicable record keeping requirements.

Abnormal Operating Conditions

Any AOC encountered while performing this task shall be documented using the Abnormal Operation Form and notification to the Control Room Manager or Designee shall be made as soon as practical. Examples of AOCs that may occur include but are not limited to:

1. Pushing upgrades causes shutdown.
2. Incorrect coding causing operator error.

4. § 195.446 Control room management.

(a) *General*. 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….
(b) ….
(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.

NGL 's records failed to demonstrate it performed an adequate point-to-point (P2P) verification. Such records were required to be maintained by § 195.446(j)(1). A review of several Incoming data/Outgoing data (I/O) checkout records for various facilities (Block valve 6, Block valve 12, Kalkaska, Lapeer, Wheeler) indicated P2P verification was completed and documented by mapping between SCADA and Programmable Logic Controller (PLC). The P2P verification record failed to include whether (1) the point was verified by live testing or simulation, (2) all screens the point presented on in SCADA were verified, and (3) alarms were presented in SCADA with the correct priority. Additionally, the document did not include color and alarm descriptions. Some points provided a verification between field and SCADA of a current value or status; for example, a comparison of pressure or valve status – but this lacked consistency between records. The document had a "Discrete I/O tab" which provided designations "As Designed Setpoint" and "As Left Setpoint;" but there was no data in these cells. The "Analog IO tab" offered set point values from "Low Low" through "High High." It is not clear whether these set point values were verified or whether these values were information to verify values.

NGL 's CRM Plan sections 3.2.2 and 3.2.3 for P2P verifications were not adequate and contributed to this failure because they were written at a very high level and did not represent NGL 's actual practice for P2P verification. The procedure "I/O Verification," approved May 8, 2023, was developed and used by SCADA for P2P/IO checkout but was not referenced in the CRM Plan sections 3.2.2. and 3.2.3. The "I/O Verification" procedure provided detail of how to conduct a test for each device and should have been included in the CRM Plan. The "I/O Verification" procedure was missing the documentation process that needed to include what form to use and what to specifically record. As such, NGL 's procedures were not in compliance with § 195.446(c)(2).

Furthermore, a review of P2P records identified the verification failed to include whether (1) the point was verified by live testing or simulation, (2) all screens the point presented on in SCADA were verified, and (3) alarms were presented in SCADA with the correct priority. Additionally, the document did not include color and alarm descriptions. Some points provided a verification between field and SCADA of a current value or status; for example, a comparison of pressure or valve status – but this lacked consistency between records. The document had a "Discrete I/O tab" which provided designations "As Designed Setpoint" and "As Left Setpoint;" but there was no data in these cells. The "Analog IO tab" offered set point values from "Low Low" through "High High." It is not clear whether these set point values were verified or whether these values were information to verify values. All the P2P verification elements and the process to complete the form should have been defined in the procedure.

The procedure needs to be amended to include reference to the form to be used to document the P2P verification. The procedure needs to include all elements to be verified that also includes (1) the point was verified by live testing or simulation, (2) all screens the point presented on in SCADA were verified, and (3) alarms were presented in SCADA with the correct priority.
Analogue values between field and SCADA as well as status points that are tested need to be documented. There also needs to be instructions on how to complete a thorough P2P to support compliance.

NGL 's Response

NGL has addressed PHMSA's findings in the procedures shown below.

#4 Amended Procedure

3.2.2 Testing Requirements

The following shall be verified during the point-to-point verification:

- Date of testing
- Personnel performing testing
- Physical location of device
- How the device is tested (Live or Simulated)
- All data values / statuses
- Discrete or Analog
- Alarm limit settings
- Confirmation of test signals
- Reason for testing
- Points verified
- Screen for which the point is presented in SCADA was verified
- Priority verified
- Colors verified
- Alarm Descriptions verified

The point-to-point verification process is accomplished by utilizing the I/O Procedure and working with Control Center Personnel, SCADA Personnel, and Field Personnel at the remote site.
Points being verified are generated from the device at the site and traced to the component on the appropriate SCADA screen(s).

- In the case of verification of control points, the command is issued from the appropriate SCADA screen(s) and the command is confirmed to reach the appropriate equipment at the remote site.
- If the command will compromise pipeline operations, receipt of command only is acceptable.

Upon approval of Control Room Manager or designee, alarms that are related to the testing may be temporarily disabled for the duration of the test.

3.2.3 Documentation

Point to Point testing will be documented. The records will be maintained for a minimum of 5 years.
Documentation shall contain the following information at a minimum:

- Date of testing
- Personnel performing testing
- Physical location of device
- How the device is tested (Live or Simulated)
- All data values / statuses

- Discrete or Analog
- Confirmation of Test Signals
- Alarm Limit settings
- Reason for testing
- Points verified
- Screen for which the point is presented in SCADA was verified
- Priority verified
- Colors verified
- Alarm Descriptions verified
- Adjustment/follow-up, as necessary
- Completion date of test report

§195.446 Control room management.

> **(d) *General*. 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. . . .**
> **(e) . . . .**
> **(f) *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) . . . .**
> **(3) Test and verify an internal communication plan to provide adequate means for manual operation of the pipeline safely, at least once each calendar year, but at intervals not to exceed 15 months.**

NGL 's CRM Plan did not provide an adequate internal communication plan (ICP) to provide adequate means for manual operation of the pipeline safely, at least once each calendar year, but at intervals not to exceed 15 months.

The ICP did not include consideration for manually managing leak detection whether the decision is to continue to move product through the system or shut down and not move product. The ICP was also missing key system points to monitor and report to the control room that represented enough information to manually operate the pipeline safely. While CRM Plan section 3.3.4 identified some field points to monitor, the plan lacked specific points for the designated systems. This also included an interval requirement for reporting the information from the field. Section 3.3.1.3 incorrectly stated the interval as "annually" not to exceed 15 months, rather than "once each calendar year."
Additionally, sections 2.2.4 and 3.3.4 of the CRM Plan did not provide any parameters around how long a controller was to wait before taking action in the event of loss of communications or SCADA failure. Controllers are trained to contact SCADA and wait 15 minutes before moving to implement the manual operations plan. This is a control room practice and not supported in procedure.
The ICP must be amended to recognize the two different modes of operation: flowing product or not flowing product. A method of leak detection needs to be provided that includes reporting and response. Specific monitoring points, adequate to support manual safe operation of the pipeline, as well as intervals to report to the control room for documentation, analysis and response, need to be provided. Additionally, procedures need to include a time parameter for how long after loss of communication or loss of SCADA the controller should wait before implementing the manual operation plan. Lastly, correction of the interval of "annual" to "calendar year" is necessary.

PHMSA finding: The ICP did not include consideration for manually managing leak detection whether the decision is to continue to move product through the system or shut down and not move product.

NGL 's Response:

The ICP has been updated to address considerations for manually managing leak detection in Section 3.3.3.1 Considerations where it considers the ability to run safely without automatic monitoring of Leak Detection Systems.

PHMSA finding: The ICP was also missing key system points to monitor and report to the control room that represented enough information to manually operate the pipeline safely. While CRM Plan section 3.3.4 identified some field points to monitor, the plan lacked specific points for the designated systems.

NGL 's Response:

This has been addressed in 3.3.3.1 Considerations (for continued operations) and 3.3.4.1 Considerations (for shutdown). Additionally, NGL has created the Form ICP-Location Info to outline specific details on locations to monitor in the event of a SCADA loss for designated systems and referenced in 3.3.4.0.

PHMSA finding: Section 3.3.1.3 incorrectly stated the interval as "annually" not to exceed 15 months, rather than "once each calendar year."

NGL 's Response:

The CRM Manual has been updated the language to read once each calendar year not to exceed 15 months.

PHMSA finding: Additionally, sections 2.2.4 and 3.3.4 of the CRM Plan did not provide any parameters around how long a controller was to wait before taking action in the event of loss of communications or SCADA failure. Controllers are trained to contact SCADA and wait 15 minutes before moving to implement the manual operations plan. This is a control room practice and not supported in procedure.

NGL 's Response:

The CRM Manual has been updated to reflect that 15 minutes will be the threshold of time before acting on SCADA outages in 2.2.4 Abnormal/Emergency Operational Monitoring Responsibilities and 3.3.4 Process and Execution.

PHMSA finding: The ICP must be amended to recognize the two different modes of operation: flowing product or not flowing product. A method of leak detection needs to be provided that includes reporting and response. Specific monitoring points, adequate to support manual safe operation of the pipeline, as well as intervals to report to the control room for documentation, analysis and response, need to be provided.

NGL 's Response:

Flow, among other considerations, are listed in 3.3.3.1. Leak detection is addressed in 3.3.4.0 with the dispatching of personnel to monitor critical devices and to report hourly. Also, 3.3.4.0 states that the Control Center Manager or Designee will determine if another operation i.e., delivery, receipt or transfer can safely be manually completed which would account for flowing/not flowing product. Additionally, a form with specific monitoring points has been created and is referenced.

PHMSA finding: Additionally, procedures need to include a time parameter for how long after loss of communication or loss of SCADA the controller should wait before implementing the manual operation plan.

NGL 's Response:

The CRM Manual has been updated to reflect that 15 minutes will be the threshold of time before acting on SCADA outages in 2.2.4 Abnormal/Emergency Operational Monitoring Responsibilities and 3.3.4 Process and Execution.

PHMSA finding: Lastly, correction of the interval of "annual" to "calendar year" is necessary.

NGL 's Response:

The CRM Manual has been updated the language to read once each calendar year not to exceed 15 months.

#5 Amended Procedure

3.3 INTERNAL COMMUNICATIONS PLAN 195.446 (c)(3)

The Controller relies on continuous communication with field devices to monitor and control pipeline facilities remotely. When communications between SCADA and a field location fail, it may be necessary to dispatch personnel to the location to either shutdown and/or isolate the facility. In some instances, it may be desirable to staff the facility to provide local surveillance, in lieu of remote data monitoring and processing, to safely operate and monitor the facility or pipeline system. This is referred to as manual operation. In a manual operation the field personnel will monitor line pressures, meter pressures, flow rates (receipts and or deliveries), tank levels and rely on the information to the control center hourly. The on-duty controller will document all readings from the field personnel in the ICP communication form.

3.3.1.1 Purpose

This procedure applies whenever a decision is made to run a facility or system in manual operation in the event of a loss of communications or any other abnormal operating condition (AOC).

3.3.1.2 Scope

Manual operation applies to pipeline systems and facilities that are controlled and/or monitored by the Control Center being switched into "local" mode during scheduled maintenance or emergency repair.

3.3.1.3 Objective

This procedure describes compliance for Control Center drills of manual operation to meet 49 CFR 195.446 (c)(3) requirements to test and verify internal communication plans to provide adequate means for manual operation of pipelines. The procedure will be tested once each calendar year not to exceed 15 months.

3.3.2 Roles and Responsibilities

3.3.2.1 Controllers

The Pipeline Controller is responsible for identifying a loss of communications or SCADA failure and quickly addressing the situation in order to avoid a compounding problem that may affect the safety and integrity of the pipeline system.

3.3.2.2 Control Room Manager or Designee

The Control Room Manager or Designee will determine if manual operations can be safely initiated. The Control Room Manager or Designee is responsible for scheduling annual drills, if needed, and communicating lessons learned and is responsible for continuous improvement of the process based on the lessons learned and corrective actions identified for individual drills and actual manual events.

3.3.3 Proceeding Safely

3.3.3.1 Considerations

The Management Team should identify the goal and discuss the general impact of the change on the existing situation. For each concern, consider how the change will affect the overall operation. Consider flow, temperature, pressure, over-pressure protection, level, etc. Also, consider what safety systems/devices are being affected. These should include, but not limited to the following considerations:

- Is there a partial or total system communication loss. If there is a partial communication loss consider manning the areas that are not communicating and the field will report to the control center every Hour, the meter counts, flow rates, Pressure readings, tank levels (if applicable).
- Ability to run safely without automatic monitoring of Leak Detection systems.
- Loss of automatic monitoring of safety devices via SCADA

- Tank or storage capacity and proximity to fill points.
- Availability of field personnel, control center personnel, and work hour limitations
- Frequency of manual communications of field data to maintain safe operations based on risk category, data accessibility, and resources. If required, additional resources will be staffed for manual data capture, allowing controllers to focus on console operations.
- Operator Qualification and Training for specific tasks in manual operation
- Properties of product or products in the line
- Plant Operations and additional risks of shutdown related to pipeline outages.
- Criteria for return to service

The Management Team should consider, “when in doubt, shutdown”, “do it safely, or not at all”.

3.3.4 Process and Execution

In the event of a SCADA failure (Communications Loss), the controller is instructed to wait for 15 minutes, and to contact the SCADA support team and Control Room Manager. If the SCADA Communication failure has not cleared and the system is not communicating for 15 minutes the controller will advise the SCADA support team. If the SCADA Team advises the controller that the SCADA system has failed and restoration of the system is unknown, the controller will initiate the Internal Communications Plan (ICP) CRM 3.3 and coordinate with the CRM Manager the Manual continued operations of the pipeline system or initiate and coordinate with the field a shutdown of all pipeline systems.

If a loss of communication is experienced:

- In the event of a SCADA failure (Communications Loss), the controller is to contact the SCADA support team and Control Room Manager immediately. If the SCADA system has failed, and Communications with critical facilities and Terminal’s has been lost for 15 minutes, the controller will communicate and coordinate the manual continued operations or shut down of the pipeline system by field personnel.
- Controller contacts the Control Room Manager or Designee to communicate an Abnormal Operating Condition (AOC).
- Control Room Manager or Designee will determine if operations can safely continue and provide guidance on returning the operation to normal.

3.3.4.0 If operations can safely continue, the following actions should be taken:

- Dispatch field personnel to monitor critical devices i.e. meters, valves, tanks, and pumps to verify that the equipment is functioning as desired while maintaining safe operation. Use Form ICP-Location Info for details of critical locations. Field personnel will call the Control Room to relay tank levels, pressures and Meter Information hourly. The controller will log information onto the Internal Communications Form. This is form 5 in the Forms section.
- The terminal manager will dispatch field personnel to the site of the outage to monitor only if the field operators can travel to the terminal or site safely.
- Once the current operation has been completed, the Control Center Manager or Designee will determine if another operation i.e., delivery, receipt or transfer can safely be manually completed. If an additional operation can be completed, then the field personnel will remain on-site to maintain equipment oversight. If safe operations cannot be guaranteed then the on-duty controller will coordinate the shutdown of all equipment until remote operation i.e. SCADA control, has been restored.

If the Control Room Manager or Designee makes the determination that the operation cannot safely continue the following steps will be taken:

- Dispatch field personnel to initiate ESD due to the absence of manual process to stop pump(s).
- After shutting down manually check all devices i.e., tanks, valves, pumps verify that the equipment is in the correct state.
- Dispatch field personnel to monitor critical devices to ensure equipment is not running or is otherwise performing the desired action.

3.3.4.1 Considerations

The Management Team should identify the goal and discuss the general impact of the change on the existing situation. For each concern, consider how the change will affect the overall operation. Consider flow, temperature, pressure, over-pressure protection, level, etc. Also, consider what safety systems/devices are being affected. These should include, but not limited to the following considerations:

- Is there a partial or total system communication loss. If there is a partial communication loss consider manning the areas that are not communicating and the field will report to the control center every Hour, the meter counts, flow rates, Pressure readings, tank levels (if applicable).
- Ability to run safely without automatic monitoring of leak detection systems
- Loss of automatic monitoring of safety devices via SCADA
- Tank or storage capacity and proximity to fill points
- Availability of field personnel, control center personnel, and work hour limitations
- Frequency of manual communications of field data to maintain safe operations based on risk category, data accessibility, and resources. If required, additional resources will be staffed for manual data capture, allowing controllers to focus on console operations.
- Operator Qualification and Training for specific tasks in manual operation
- Properties of product or products in the line
- Plant Operations and additional risks of shutdown related to pipeline outages.
- Criteria for return to service
- Leak Detection

The Management Team should consider, “when in doubt, shutdown”, “do it safely, or not at all”.

3.3.5 Internal Communications Plan Review

The Internal Communication Plan must provide an adequate means for safely operating the pipeline manually. The test can be based on scheduled annual drills or actual events. The procedure will be tested at least once each calendar year, but at intervals not to exceed 15 months.

3.3.6 Continuous Improvement

Opportunities for continuous improvement will be identified through reviews and lessons learned and will be integrated into manual operations procedures and training.

5. §195.446 Control room management.

(a) *General*. 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. . . .
(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.

NGL 's CRM Plan was not adequate to provide 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 in the event a controller is not able to complete a shift. Section 2.4.7 of the CRM Plan, entitled "Controller Unable to Complete Shift," required the supervisor to find the replacement managing the hours of service (HOS) and document any deviations. The expectation of this process was that the individual must stay on the console until relieved. Then, if the person cannot stay until relieved, NGL control operations would revert to the manual operation plan. This was not mentioned in the procedure but was described during the inspection as what controllers and field do in practice.
Also, the CRM Plan did not mention a shift change requirement as required by § 195.446(b)(4). Following this section was section 2.4.8, entitled "Temporary Relief," which considered the condition of a controller requiring relief from the console. This did require a mid-day shift change. In summary, the practice described by the Control Room Manager was different than what was outlined in sections 2.4.7 and 2.4.8.

The procedure needs to be amended to provide greater detail on the expectation for when a controller leaves the console either for a temporary break or because they cannot continue on the shift due to emergency conditions. This procedure needs to include considerations for shut down if a suitable replacement cannot be found, shift exchange information, managing hours of service, and where practices are in place, if appropriate, memorialization of them into the procedure to effectively implement methods to reduce the risk associated with controller fatigue that could inhibit a controller's ability to carry out their roles and responsibilities.

NGL 's Response:
Section 2.4.7 has been updated to include reference to the Internal Communications Plan if the controller is unable to stay at the console until a replacement has come. Additionally, a shift turnover has been added to the procedure

#6 Amended Procedure

2.4.7 Controller Unable to Complete Shift

In the event a Controller is unable to complete their scheduled shift, it is the responsibility of the Controller to notify the Control Room Manager or designee.

- Control Center Manager or designee will find their replacement.
- Control Center Manager or designee should be aware of the Hours-of-Service Limits.
- As warranted, Control Center Manager or designee shall document any deviations.
- If at any time the controller on duty falls Ill and is unable to complete their shift, the controller is to contact the control room manager and remain at the console until relief is available when relieve arrives, then a Mid-day Shift Turnover must be completed with the incoming controller. Only after the Mid-Day shift Turnover is completed will the incoming controller assume responsibility for the console.
- If the control room manager or Lead Controller is not on site in or at the control room, and no relieve for the controller is available and the controller needs to leave the control room before being relieved, then a Mid-day Shift Turnover must be completed with the Control Center Manager or Lead and they will notify all the terminal managers to initiate the Internal Communications Plan (ICP), advise them to monitor all terminals and lines in their respective jurisdictions until the manager or another qualified controller can reach control room and assume responsibility of the console whereby another shift turnover will be completed with the incoming controller.
  In the event that the outgoing controller is unable to conduct a shift turnover with the Control Center Manager or Lead, the Control Center Manager or Lead will review controller logs.

2.4.8 Temporary Relief

If a on duty controller needs to be Temporary relieved of duty, a Midday Shift Turnover must be completed with the incoming controller that will be covering assuming responsibility of the console. A Midday shift turnover is to be completed if the current controller needs to be relieved for 15 minutes or longer. At no time should the controller be out of hearing range of alarms or phones. The controllers are issued Bluetooth headsets that allow them to recognize and react to alarms if utilizing the breakroom/restroom as necessary.

If the control room manager or Lead Controller is not on site in or at the control room, and no relieve for the controller is available and the controller needs to leave the control room before being relieved, then a Mid-day Shift Turnover must be completed with the Control Center Manager or Lead and they will notify all the terminal managers to initiate the Internal Communications Plan (ICP), advise them to monitor all terminals and lines in their respective jurisdictions until the manager or another qualified controller can reach control room and assume responsibility of the console whereby another shift turnover will be completed with the incoming controller.

In the event that the outgoing controller is unable to conduct a shift turnover with the Control Center Manager or Lead, the Control Center Manager or Lead will review controller logs.

6. §195.446 Control room management.

(a) *General*. 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. . . .
(b) . . . .
(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) . . . .
(3) Verify the correct safety-related alarm set-point values and alarm descriptions when associated field instruments are calibrated or changed and at least once each calendar year, but at intervals not to exceed 15 months.

NGL 's CRM Plan was not adequate to demonstrate NGL had verified the correct safety-related alarm set-point values and alarm descriptions when associated field instruments were calibrated or changed. Specifically, CRM Plan section 5.6.2 only required the review of safety-related alarms once each calendar year, not to exceed 15 months, and was silent on the requirement for safety-related alarm set points and descriptions, as well as when field instruments are calibrated or changed. The procedure was also missing the process that included the controllers roles and responsibilities for this task, as well as documentation and verification.

The procedure needs to be amended to include all the requirements identified in § 195.446(e)(3), as well as a process for the controllers to follow to complete and document the verification. Also, PTC HL001 must be amended to include the requirement that the correct safety related set points are verified and documented with the field.

NGL 's Response:

The procedure has been amended as shown below:

#7 Amended Procedure

5.6 Alarm Setpoint and Description Review
This procedure is designed to provide a standard process for review of the safety related alarms. This process should be followed to ensure that this procedure is carried out in an efficient, routine and safe manner.

5.6.1.1 Definitions
- Alarm Management Group: Individuals designated to perform alarm management
- Safety Related Alarm (SRA): Alarms that specifically indicate that equipment, systems, or processes are outside operator-defined safety-related parameters.

5.6.2. Roles and Responsibilities
The Alarm Management Group, which may include but is not limited to a SCADA representative, Lead Controller, Control Room Manager, and controllers, will review all current Safety Related Alarms via the Master Alarm Database at least once each calendar year, but at intervals not to exceed 15 months and when associated field instruments are calibrated or changed. This review is to identify any errors or additions to the current safety related alarm criteria to ensure accuracy and compliance. Any changes or updates that are made will be carried out by the SCADA Analyst.

I&E Technicians shall work with the control room during calibrations

5.6.3 Process and Execution – Annual Review Process

The Annual Review Criteria will be as follows:

- Alarm descriptors are clearly understood by controllers.
- Controllers are solicited for input when choosing or editing the text of alarm descriptors.
- Alarm descriptors are in a consistent format, where alarms from the same location have the same location coding. Similar devices from multiple locations share the same device coding.
- Determine correct pressure and flow alarm setpoints for each alarm priority.
- The process should accommodate the need to adjust pressure and flow requirements based on the discovery of imminent integrity threats (e.g., discovery of immediate repair conditions during integrity assessments and notifications).
- Compare the Master Alarm Database Excel document to the HMI to ensure that no changes have been implemented and not approved. All changes shall be accompanied by MOC.

5.6.4 Process and Execution – Calibrations

I&E or designee should work with the control room to:

- Complete calibration per device procedure.
- Verify Alarm Descriptors are correct for the piece of equipment being calibrated.
- Verify Alarm descriptors are clearly understood by controllers.
- Verify that field alarm setpoints are consistent with control room alarm setpoints, or a rationale for any offset values.
- Document Setpoint and Description reviews were completed on the Devices Calibration / Inspection Report.
- Notify Terminal Manager if a MOC is required due to Setpoint or Descriptor Changes.

5.6.5 Documentation

Documentation of the Review will be recorded on the Alarm Setpoint and Description Form and/or device calibration form. Any changes that are necessary will also be documented using the MOC process.

7. §195.446 Control room management.

(a) *General*. 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. . . .
(b) . . . .
(e) *Alarm management.* Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms. An operator's plan must include provisions to:
(1) . . . .
(5) Monitor the content and volume of general activity being directed to and required of each controller at least once each calendar year, but at intervals not exceeding 15 months, that will assure controllers have sufficient time to analyze and react to incoming alarms.

The CRM Plan was not adequate to demonstrate that it considered all the content and volume of general activity being directed to and required of each controller that will assure controllers have sufficient time to analyze and react to incoming alarms**.** Specifically, section 11.7 established the requirement for the work load review. The procedure listed five items to be included in the review. These review elements were: (1) volume of alarms, (2) volume of nuisance or "bad actor" alarms, (3) volume of states of alarm flood, (4) volume of operational events, and (5) operational changes increasing or decreasing the number of alarms. The procedure stated the review "is not limited to" these five items. All of the five identified items pertained to the volume of alarms, which required controller actions (assumed time component). One of the five items provided consideration for operational events, which may be set points, but this was not clear. The workload review did not include other controller activities such as phone calls, sending commands, acknowledging alarms, report completion, monitoring, scheduling, training, reading, and any other activity that may be unique for the control room. The operator did not have a form to guide review or detailed instructions on how to conduct the review. The operator had no bench mark or relationship to time spent on activities to determine "sufficient time to analyze and react to incoming alarms."

The procedure needs to be amended to identify all content and volume of general activity being directed to and required of each controller and establish a benchmark as to what designates sufficient time to analyze and react to incoming alarms. The procedure also needs to include the process for completing the review, as well as how the review, results, and determination will be documented and recorded.

NGL 's Response:

Section 11.7 has been amended as shown below:

#8 Amended Procedure

11.7. Workload Metrics
Workloads Metrics should be completed during predicted busy periods and whenever possible during pipeline movements are scheduled. This will give the Company a worst-case scenario for a controller's workload and give a more accurate metric.

11.7.1. Alarm Metrics
A key component of the workload analysis is to ensure that the number of alarms being received at a workstation does not exceed the Controller's ability to analyze and respond to those alarms. Therefore, the Company has established various types of alarm system analyses and KPIs to ensure

that controllers have the ability to analyze and react to alarming conditions. Both initial alarm system assessment and on-going monitoring includes measures utilize metrics indicated in Table 1 – Alarm Performance Metrics.

Table 1 - Alarm Performance Metrics		
Alarm Performance Metrics per Controller Position (Based upon at least 30 days of data)		
Metric	**Target Value**	
Annunciated Alarms	**Target Value: Very Likely to be Acceptable**	**Target Value: Maximum Manageable**
Per Day	≤ 150	≤ 300
Per Hour	≤ 6	≤ 12
Per 10 Minutes	≤ 1	≤ 2
Metric	**Target Value**	
Percentage of hours containing more than 30 alarms	< 1%	
Percentage of 10-minute periods containing more than 5 alarms	< 1%	
Percentage of time the Alarm System is in a flood condition	< 1%	
Percentage contribution of the top 10 most frequent alarms to the overall alarm load	< 5% (action plans to address deficiencies)	
Quantity of chattering and fleeting alarms	0	
Consequential / Duplicate alarms	≤ 5 (action plans to correct any that occur)	
Standing	< 20 (action plans to correct any that occur)	
Stale Alarms	< 5 present on any day (with action plans to address)	
Annunciated Priority Distribution	4 priorities~80% Low, ~15% Medium, ~5% High, ~1% 'highest'	
Unauthorized Alarm Suppression	Zero alarms suppressed outside of controlled or approved methodologies	
Unauthorized Alarm Attribute Changes	Zero alarm attribute changes outside of approved methodologies or MOC	

Analysis of alarm rates (i.e., annunciated alarm rate) and alarm metrics is a good indicator of the overall health of the alarm system. These targets are for the average alarm rate per workstation (i.e., the span of control and alarm responsibility of a single operator) and are based upon at least one month of data. In addition, these rates were established based upon the time and ability of a controller to detect an alarm, diagnose the situation, respond with corrective action(s), and monitor the condition to verify the abnormal condition has been corrected. Sustained operation above the maximum manageable guidelines indicates an alarm system that is annunciating more alarms than a Controller is likely able to handle, and the likelihood of missing alarms increases, even if the average for that interval is acceptable.

Utilizing the acceptable and maximum daily alarm rates (Table 1), the Company can calculate the amount of time needed to handle these thresholds by dividing them by the number of minutes in a shift. The Table below identifies the average amount of time between annunciated alarms using the KPI's.

Alarm Rate	Time Between Alarms (12 hour shift)
150 (KPI)	4.8 minutes
300 (KPI)	2.4 minutes

With the average amount of time between annunciated alarms using the KPI's established, the Company can utilize this as the shortest amount of time allowed between alarms and compare this to the Alarm System Performance Measurements in Table 1. As long as the average time between the actual alarm metrics is greater than the average time between KPI alarms, the Company can conclude that the alarm rate is not exceeding the controller's ability to react to incoming alarm.

11.7.2. Job Task Analysis

The objective of this analysis is to conclude that each Controller has sufficient time to analyze and react to alarms, and if necessary, remedy the content and volume of activities being directed to the Controller. This is accomplished by reviewing the tasks required of each Controller and by reviewing the Alarm System Performance Measure's. When cross analyzing time on task and performance measures, the Company can substantiate any conclusions about maintaining or changing assigned duties so that alarm management practices are safely being analyzed. Regulatory Compliance or Designee is responsible for conducting the job task analysis annually NTE 15 months.

The Company analyzes the amount of time each controller spent on tasks during three (3) day and three (3) night shifts. Each study shall be completed when they are on the board and not filling in for other duties (i.e. Outside Operator). The Study should be conducted during the busy period of the year. Determining a busy period can unpredictable so the Company should utilize the previous year's alarm data to determine which month was busy and review future scheduling activity to determine which month would be best to conduct the study for the current year. This study includes all controllers, which gives the company an understanding of the average workload a Controller will see during any shift. The following metrics are included in this job task analysis:

- Pipeline Operations,
- Conducting shift change,
- Greeting and responding to visitors,
- Administrative tasks,
- Impromptu requests,
- Telephone calls,
- Faxes,
- Monitoring weather and news reports,
- Checking security and video surveillance systems,
- Using the internet,
- Interacting with colleagues, supervisors, and managers,
- Additional Fatigue Mitigations,
- Bathroom breaks,
- Gate Access / Activity,
- Kitchen Activities,
- On the Job Training,
- Log Sheet / Calculations,
- Pump Orders and Scheduling, and
- Other

After compiling and analyzing the above metrics, the Company determines how much time is devoted to non-SCADA specific job tasks that takes away from the Controller's primary responsibility which is:

- Monitoring Pipeline Operations
- Initiating Commands to SCADA (Proving, Valve Swings, Start-up, Shut-downs, Etc.), and
- Responding to SCADA Alarms

When Controllers are conducting tasks that fall into the Controller's primary responsibility, that

Controller(s) is not distracted from the SCADA System and can immediately respond to incoming alarm. Therefore, these tasks do not impact or impede the Controllers ability to react and respond to incoming alarms.

11.7.3. Results

Lastly, when conducting the workload analysis, the Company compare the amount of free time that a Controller has on hand vs the amount of time required to acknowledge incoming alarms. As long as the controllers free time is greater than the time to acknowledge incoming alarms the Company can conclude that the workload being directed to each controller is sufficient to the point that controllers can adequately respond and react to incoming alarms.

The Company shall document the job task analysis results and retain the records for a period of 2 years or until the next inspection or test is performed; whichever is longer.

8. §195.446 Control room management.

(a) *General*. 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. . . .
(b) . . . .
(g) *Operating experience*. Each operator must assure that lessons learned from its operating experience are incorporated, as appropriate, into its control room management procedures by performing each of the following:
(1) Review accidents that must be reported pursuant to §§ 195.50 and 195.52 to determine if control room actions contributed to the event and, if so, correct, where necessary, deficiencies related to:
(i) Controller fatigue;

NGL 's CRM Plan was not adequate to determine if control room actions contributed to the event due to deficiencies related to controller fatigue. Section 4.1.10.2 provided a process to ask probative questions that support evaluation of a controller's potential fatigue level. This included: (1) hours of work for the preceding seven days, (2) hours of sleep in the past 24 hours, past 48 Hours, past 72 hours, (3) hours on duty at time of accident, (4) hours since last sleep, and
(5) time accident occurred, with particular attention if it occurred during periods of reduced alertness. How this information was gathered and documented and the process to evaluate if fatigue was a factor were missing from the procedure. The operator indicated they used Form 4 "AOC Report," however there was nothing on that form related to fatigue or the questions and information gathered in section 4.1.10.2.

The procedure needs to be amended to include a form and method to determine a controller's fatigue level and to determine if control room actions contributed to the reported accident and, if so, correct, where necessary, deficiencies related to controller fatigue.

NGL 's Response:

The procedure has been revised as shown below. There is also a corresponding form. See Question #8 Supplemental Docs.

#9 Amended Procedure

4.1.10.2 Accident Investigations

Use these methods to investigate if fatigue may have contributed to an accident.

Initial Screening Questions

4.1.10.2.1 If any of the following is true, then proceed with the methodology below.

- Does the operator's 72-hour history suggest little sleep or less sleep than usual?
- Did the mishap occur during periods of reduced alertness, i.e., about 2:00 to 6:00 a.m. or about 1:00 to 3:00 p.m.?
- Had the operator been awake for a long time at the time of the mishap?
- Does the evidence suggest that the mishap was a result of inaction or inattention on the part of the operator?

4.1.10.2.3 Methods

It is important to establish two factors before concluding that operator fatigue contributed to a mishap.

First, determine whether the operator was susceptible to fatigue effects because of Risk Factors. Second, if the operator was susceptible to fatigue risk factors, then determine whether the operator's performance and/or behaviors at the time of the mishap were consistent with the effects of fatigue.

4.1.10.2.4 Susceptibility to Fatigue Effects

Determine whether the operator was experiencing sleep debt by documenting conducting slept debt survey for the past few days, and by learning about the operator's typical sleep habits. Interview the Controller and other witnesses. Review other schedules, Operations Log, or other records.

- Determine the operator's typical sleep patterns: bedtimes and awakening times for workdays and days off.
- Determine the operator's sleep pattern for at least 72 hours immediately preceding the mishap.
- Determine whether naps were taken in the days preceding the mishap. When, where, for how long, and why?
  - ***Criterion 1****: Acquisition of less than about 21 hours of good quality sleep in the preceding 72 hours suggests that fatigue was present at the time of the mishap.*
  - ***Criterion 2****: Acquisition of less than about 6 hours of good quality sleep in the preceding 24 hours suggests that fatigue was present at the time of the mishap.*
- Determine how long the operator had been awake at the time of the mishap. This is the length of time since the last major sleep period of at least six hours.
  - ***Criterion 3****: More than 16 hours of continuous wakefulness suggests that fatigue was present at the time of the mishap.*
- Determine whether the human fatigue factors problems associated with the mishap occurred during periods of reduced alertness.
  - ***Criterion 4****: Occurrence during the periods of about 2:00 to 6:00 a.m. or about 1:00 to 3:00 p.m. suggests that fatigue was present at the time of the mishap.4*
- Determine whether the operator suffered from circadian rhythm issues due to recent crossings of multiple time zones.
  - ***Criterion 5****: Crossing three or more time zones within the same number of days preceding the mishap suggests that malaise was present at the time of the mishap. Determine whether the operator rotated to or from a night shift preceding the mishap.*

- ***Criterion 6:*** *Rotation to or from a night shift within the three days preceding the mishap suggests that malaise was present at the time of the mishap.*

4.1.10.2.5 Medical Factors

Determine whether the operator suffered from sleep disorders or other sleep-disturbing medical factors. Sources include the operator's medical and pharmacy records. If applicable, have the operator evaluated by a physician who specializes in sleep medicine. Review the operator's toxicological results for substances that may affect sleep or alertness.

- Diagnosed with insomnia, narcolepsy, sleep apnea, and/or Shift Work Sleep Disorder?
- Prescription medications for sleep- or sleepiness-related problems?
- Other medical concerns that affect sleep (e.g., chronic pain, Gastro esophageal reflux disease (GERD), etc.)?
- Other drowsiness-inducing medications?
  - ***Criterion 7:*** *The presence of sleep disorders or other sleep-disturbing medical factors suggests that fatigue was present at the time of the mishap*.

4.1.10.2.6 Other evidence of fatigue:

- Check work records and records of previous mishaps/incidents (including DMV and/or insurance records) for evidence of prior falling asleep during vehicle operation.
- Determine what kind of training the operator received regarding fatigue management.
- Review the operator's mishap environment and tasks for unusual conditions that would depress arousability, such as low lighting, operational delays, or boredom.
- Determine whether there have been complaints of operator fatigue in the recent past.

4.1.10.2.7 Performance and Behaviors

Determine whether the operator's performance at the time of the mishap was consistent with the effects of fatigue.

- Overlooking or skipping tasks or parts of tasks?
- Focusing on one task to the exclusion of more important information?
- Delayed responses to stimuli or unresponsiveness?
- Impaired decision-making?
- Slow to adapt behavior to accommodate new information?
- Reduced frequency of communications?
- Did the Controller respond to the alarms being generated within the required acknowledgement timeframe designed with the priority of alarm activated?
- Were the operator's behaviors before the mishap suggestive of sleepiness/fatigue, according to witness interviews, operator report of being tired, audio or video records of the operator's behavior, etc.?
  - ***Criterion 8:*** *Performance and/or behaviors consistent with fatigue effects suggest that fatigue was present at the time of the mishap.*

4.1.10.2.8 Conclusions

- A finding that the operator was susceptible to fatigue effects (meeting one or more of criteria 1 through 6) and demonstrated performance or behaviors consistent with fatigue (met criterion 7) indicates a reasonable probability that fatigue was a probable cause or contributing factor in a mishap.
- A finding that the operator was susceptible to fatigue effects (meeting one or more of criteria 1 through 7) without demonstrated performance or behaviors consistent with fatigue (criterion 8) should not be used to support operator fatigue as a probable cause or contributing factor in the mishap. However, the finding may still be an important safety issue to be addressed in the mishap report.

9. §195.446 Control room management.

(a) *General*. 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. . . .
(b) . . . .
(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:

NGL 's CRM Plan was not adequate because it did not provide a process to review the training program content to identify potential improvements. Section 8.1.1.3 stated the training program "[i]s to be maintained by reviewing it at least once each calendar year, but at intervals not to exceed 15 months and in a manner that identifies continuous process improvement opportunities. The review shall ensure that documents, procedures, records and other information are current and accessible." However, § 195.446(h) requires that an operator have a training program and that the content be reviewed to identify potential improvements. The review was recorded through Form 9. This review included many elements that relate more to effectiveness of training. This type of review could identify if there were gaps in skills/knowledge/transfer of training. Those gaps could lead to evaluating training content. However, the form and process did not get to the heart of training content review, which evaluates the content to verify it addresses all knowledge, tasks and skills required for the controller to carry out their roles and responsibilities as defined by the operator.

The regulation also requires the training program to provide training for the controller to carry out their roles and responsibilities. If over the course of the year, roles and responsibilities have been added or eliminated, then the training content must be reviewed to verify there is content to cover that activity or the content is removed.

The procedure needs to be amended to include a process for reviewing the content to ensure it provides training controllers in their roles and responsibilities. It must also include identification of the findings, and documentation of modification to findings to identify potential improvements.

NGL 's Response:

NGL has amended the procedure to address the cited deficiencies. See procedure (below) and corresponding form in Question #10 in the Supplemental Docs folder.

#10 Amended Procedure

The training program will be reviewed with the operating personnel once each calendar year at an interval not exceeding 15 months to identify potential improvements. The following elements can be reviewed to determine improvements needed to training program:

- Accidents occurred since last reviewed
- Accidents contributed by controller
- AOCs contributed by a controller
- AOCs that occurred since last training
- Any updates to CRM Regulations

- New SCADA Software installed since last training
- New Pipeline system since last training
- New equipment since last training
- Deficiencies found in the training program effectiveness review.

Appropriate changes will be made to ensure that the training program is implemented and documented Training Program Review From.

NGL is committed to full compliance with the requirements of PHMSA. I appreciate your consideration in this matter. Please let me know if you have any questions or require additional information.

Sincerely,

Eric S Coleman
Director of Operations / Compliance
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