Questions for Controller Interview Associated with CRM Inspection

192.631(a)(2) The procedures required by this section must be integrated, as appropriate, with operating and emergency procedures required by §§192.605 and 192.615. An operator must develop the procedures no later than August 1, 2011, and must implement the procedures according to the following schedule. The procedures required by paragraphs (b), (c)(5), (d)(2) and (d)(3), (f) and (g) must be implemented no later than October 1, 2011. The procedures required by paragraphs (c)(1)-(4), (d)(1), (d)(4), and (e) must be implemented no later than August 1, 2012. The training procedures required by paragraph (h) must be implemented no later than August 1, 2012, except that any training required by another paragraph of this section must be implemented no later than the deadline for that paragraph.

Inspection Question	Procedures	Implementation	Inspector Notes
A1-4: Are procedures readily available to controllers in the control room? • Procedures in the control room must be the most current approved version. • Procedures should be conveniently available to on-shift controllers in paper format and/or electronically. • Procedures should be accessible from each controller's console/desk. Where are the CRM procedures kept?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

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

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

Inspection Question	Procedures	Implementation	Inspector Notes
B1-1: The operator should have clear procedures ~~been~~ established to describe each controller's physical domain of responsibility for pipelines and other facility assets. • If the control room has more than one controller on shift, roles and domain of responsibility for each controller must be clearly established. • "Physical domain of responsibility" refers to both the physical pipeline assets being monitored and controlled, and SCADA/communications assets (such as desks, consoles, phones, radios, etc.) being used in support of monitor and control duties. • FAQ B.01. Procedure includes formal definition and documentation of controller roles and responsibilities. What is your role and what are your responsibilities?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
B1-2: Are there provisions in place to assure that only qualified individuals may assume control at any console/desk? • Provisions could include measures such as SCADA login passwords, and/or controlled access to the control room. Such measures should address periods when the control room is unattended, if applicable (also, see B4-1e). • Provisions must be in place to assure that controllers are qualified persons as detailed in covered tasks that are required by Part 195, Subpart G—Qualification of Pipeline Personnel and Part 192, Subpart N—Qualification of Pipeline Personnel. What OQ training have you had? • FAQ B.03. A control room supervisor may direct or advise a controller on specific actions to take to complete a safety-related task, if and only if, the supervisor is a qualified controller on that console/desk. If the supervisor is not a qualified controller, then the supervisor may assign activities to the controller, but not the precise actions to take to implement those activities.	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records Interview	

When do you seek assistance from your supervisor? • Overpressure • Rupture • Unusual alarms • Nuisance alarms How does your supervisor direct you to handle these situations?			
B1-5: Do the defined roles and responsibilities require controllers to stay at the console to verify all SCADA commands that have been initiated are fulfilled, and that commands given via verbal communications are acknowledged before leaving the console for any reason? • Some SCADA commands can be complex or take an extended period of time to execute in the field. Because control actions can be critical to maintain safety, controllers should remain attentive during this time, and not leave the console prematurely. • Shift change operations should not conflict or interfere with controller vigilance during the fulfillment of command actions or critical communications with field personnel. When are you allowed to leave your console? • Lunch • Bathroom breaks • To get beverages What do you do if there is currently a situation that needs attention?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

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

Inspection Question	Procedures	Implementation	Inspector Notes
B2-1: Has a procedure been established to define the controllers' authority and responsibilities when an abnormal operating condition is detected? • Many controllers have the same authority and set of responsibilities during normal, abnormal and emergency situations, including the expectation to directly take action when abnormal conditions arise. • Some controllers may need to seek guidance or get a supervisor's approval before taking action. This must be explained in the operator's procedures. • If controllers must seek approval from supervisors or other authorized personnel, procedures must require that those other persons always be immediately available, and controllers should have the means to immediately communicate with those individuals. • Procedures should address a controller's responsibility when the controller is not the first to detect the condition, including the controller's responsibility to take specific actions and to communicate with others. What is the procedure when an abnormal operating condition is detected?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
B2-2: Are controllers aware of the current MAOPs/MOPs of all pipeline segments for which they are responsible, and have they been assigned the responsibility to maintain those pipelines at or below the MAOP/MOP?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed	

• Some operators may choose to set actual operating pressure limits lower than MAOP/MOP. In these cases, controllers should at least know the limits in lieu of full MAOP/MOP. • Controllers' written procedures should include a stipulation to protect pipeline segments from exceeding authorized pressures. • A thorough listing of MAOPs/MOPs (or prescribed lower limits) should be in easy reach to the controllers, either in paper format or accessible on computer. • It is also especially important that procedures specify the importance of protecting pipeline segments from exceeding any imposed pressure reductions which would supersede normal maximum limits. Where do you find the MAOPs/MOPs of the system? What do you do if you see a MAOP/MOP that is unusual? • Too high • Too low		☐ Records ☐ Interview	

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

Inspection Question	Procedures	Implementation	Inspector Notes
B3-1: Has the operator procedurally defined the controllers' authority and responsibility to make decisions, take actions, and communicate with others upon being notified of, or upon detection of, and during, an emergency or if a leak or rupture is suspected? • Many controllers have the same authority and set of responsibilities during normal, abnormal and emergency situations, including the expectation to directly take action when abnormal conditions arise without the need to consult with supervision/ management or get management approval. • Other controllers may be required to seek guidance or get a supervisor's approval before taking action. This must be explained in the operator's procedures. If controllers must seek approval from supervisors or other authorized personnel, procedures must require that those other persons always be immediately available, and controllers should have the means to immediately communicate with those individuals. • Procedures should address a controller's responsibility when the controller is not the first to detect the emergency. • Procedures should address the controller's responsibility to: directly call 911 or local phone number of appropriate local emergency officials to report emergencies to first responder agencies/authorities, or prompt others to make such calls. What authority do you have to make decisions, take action, and communicate with others? When do you need to clear actions with your supervisor? How do you contact your supervisor? When do you call 911?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

B3-2:	Do the operator's procedures specifically address the controller's responsibilities in the event the control room must be evacuated? • Although an unforeseen need to evacuate the control room or the entire building should be a rare event, operators must plan for such an occasion. • In such an event, there may be little time to act, so an operator's plan must be able to be executed immediately and quickly. What do you do if the control room needs to be evacuated?		SAT UNSAT		SAT UNSAT Observed Records Interview	
B3-3:	Do the operator's procedures specifically address the controller's responsibilities in the event of a SCADA system or data communications system failure impacting large sections of the controller's domain of responsibility? • Procedures must address controllers' initial actions after a major SCADA system or communications system failure. • Plans should include contacting supervision, but should also include what first actions the controllers should initiate in the first few minutes of the event. What do you do if the SCADA system fails? What do you do if a large set of data communications fail?		SAT UNSAT		SAT UNSAT Observed Records Interview	

192.631(b)(4) A method of recording controller shift-changes and any hand-over of responsibility between controllers. *NOTE: SHIFT CHANGE PROCESS IS ADDRESSED IN B4. THE CONTENT OF SHIFT CHANGE IS ADDRESSED IN C5.*

Inspection Question		Procedures		Implementation		Inspector Notes
B4-2:	Do the procedures require that records document the hand-over of responsibility, document the time the actual hand-over of responsibility occurs, and the key information and topics that were communicated during the hand-over? • An operator's records must annotate what topics were covered during shift change. In the event certain operational aspects are not important to the incoming controller, the record must still annotate "no change" rather than not covering the topic. • The specific time and date of shift change must be included in the records, not just "Tuesday night" or "morning shift" • Just recording the time/date of shift change, without the annotation of topics covered, is not adequate. • SCADA server time should be synchronized with other sources of timekeeping used for operational records. • Because of varying operational needs, a controller arriving late or an extended discussion of unusual events, shift change will not actually occur at exactly the same time every day. Records that annotate a shift change at exactly the same time every day should be questioned during an inspection. • Shift hand-over records may refer to other information or records, as appropriate. • See C5-1 for specifics. Explain the process for a shift change. • When is it done? • What forms are filled out? • What information is documented on the form? • What other information is communicated?		SAT UNSAT		SAT UNSAT Observed Records Interview	
B4-4:	When a controller is unable to continue or assume responsibility for any reason, does the shift hand-over procedure include alternative shift hand-over actions that specifically address this situation? • If the incoming controller is late arriving, procedures should		SAT UNSAT		SAT UNSAT Observed	

address the responsibilities of the current controller and/or management to address the issue. • If controllers are permitted to find their own replacement among available controller staff, control room supervisors/managers should still be accountable for Hours of Service (HOS) requirements and limitations. • Operator's procedures should provide a mechanism for an on-shift controller (or a controller due to come on shift) to alert management that he/she is unable or unfit for duty, because of illness, fatigue, car trouble or other issues. What happens if you get sick during your shift? What happens if the controller on the next shift can't get to work?			☐ Records ☐ Interview	
B4-5: Has the operator established adequate procedures for occasions when the console is left temporarily unattended for any reason? • FAQ B.04. Depending on an operator's specific system operations, a particular control room may not have to be staffed by controllers, full time. The operator's procedures should include an explanation of when and how the pipeline is operated when the control room is unattended. • Such procedures should include special provisions for shift change realizing that face-to-face communications between the departing and arriving controllers may not occur. What is the procedure when you leave the console for short breaks such as getting beverages or food, using the restroom, etc.?	☐ SAT ☐ UNSAT		☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
B4-6: Does the operator maintain adequate console coverage during shift hand-over? • Assure coverage if occasionally the controller needs to leave the console/desk area (beyond visual and hearing range of alarms). • If the controller is allowed to leave the console/desk area, procedures must assure adequate responsiveness. • If the shift changes to a different physical location, the actual time of the hand-over in responsibility must be known to both the outgoing and incoming controllers. • The time allocated to complete shift hand-over should be sufficient to adequately communicate needed information exchange. How do you ensure that alarms and other conditions are recognized during a shift change?	☐ SAT ☐ UNSAT		☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	.

192.631(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:

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

NOTE: SHIFT CHANGE PROCESS IS ADDRESSED IN B4. THE CONTENT OF SHIFT CHANGE IS ADDRESSED IN C5.

Inspection Question	Procedures	Implementation	Inspector Notes
C5-1: Has the operator established and implemented a procedure to orchestrate the hand-over of responsibility from one controller to another? • All items in this listing are specified in section 5 of API RP 1168, and are mandatory for HL operators. Gas operators should also address these items, but may be able to justify not including some	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

of these items in their checklist based on the specific nature of their gas pipeline operations. ○ Assure operational continuity ○ Address system control accountability during hand-over ○ Generate a record of accountability transfer ○ Assure phone monitoring during transfer ○ Manage distractions that could adversely impact transfer ○ Require a meeting to be conducted to brief incoming controllers on the status of current operations. ○ Procedures to require a console specific checklist of information to be exchanged. (See C5-1c for content of checklist.) • FAQ C.10. Shift hand-over procedure must be performed even if no unusual events occurred during the entire previous shift. • FAQ C.11. Shift hand-over procedure must be performed even if an operator has a controller on regular day shifts only (e.g., 8-5 M-F) and uses callouts to handle off-shift needs, since the controller may unexpectedly have to be replaced as the result of illness or other circumstance that prevents the controller from returning to duty the next day as planned. • Even if the same individual plans to return the next morning, the shift hand-over process will help ensure no critical information has been forgotten. (See questions in B4)			

192.631(c)(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;

C1-3:	Has the operator implemented section 4 of API RP 1165 regarding human factors engineering? • 4.1 Short term memory • 4.2 Signal to noise ratio • 4.3 Eye scan pattern • 4.4 Consistency ○ General consistency for shapes and symbols ○ Layout consistent among displays ○ Information density consistent among displays ○ Flow paths depicted consistently among displays ○ If the operator has grouped more than one console/desk into a team, consistency of display formats, layout, shapes and colors across all team consoles/desks. ○ Consistency between control room display colors for off, closed, open, on and locked out with color choices on related field equipment controls • 4.5 Coding ○ Coding is the assignment of meaning to an arbitrary visual cue. Examples of information coding include color-coding of normal/abnormal conditions or shape-coding of device symbols such as pumps, valves, and meters. What challenges do you have during a shift? • Too many things happening at once? • Unable to understand alarms? • Inconsistent alarm indication? (such as color for "open" isn't always the same) • Confusing layout of system? • Difficult to remember everything that needs to be done?	☐ SAT ☐ UNSAT ☐ N/A	☐ SAT ☐ UNSAT ☐ N/A ☐ Observed ☐ Records ☐ Interview	

192.631(c)(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;

Inspection Question	Procedures	Implementation	Inspector Notes
C2-1: Has the operator adequately defined safety-related points? • Examples of safety-related points are provided in FAQ C.01. • Procedures should be established to define which points are declared as safety-related • Operator should have a list (or database) of points that indicates whether or not each point is safety-related. • Procedures should also address criteria for treating points as safety-related. • Points associated with all safety-related alarms and control points must be included. • Station inlet and discharge pressures should fall into the safety-related category. • Pressure Regulator inlet and outlet pressures should fall into the safety-related category. • Soft points (points created in SCADA software) should be considered when determining a list of safety-related points. How do you know if a point is safety-related? How are the criteria for these points identified?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(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:

Inspection Question	Procedures	Implementation	Inspector Notes
D0-2: Does the operator's plan adequately address how the program reduces the risk associated with controller fatigue? • An operator's fatigue mitigation plan and document the scientific basis for provisions of the plan. (74 FR 63321) • Operators should have a documented and accessible policy for dealing with controllers who are self-identified and/or identified by supervisors as being too fatigued to safely control the pipeline. • The operator's plan should address identified issues in Advisory Bulletin (ADB–05–06) "Countermeasures to Prevent Human Fatigue in the Control Room" dated August 11, 2005 (70 FR 46917). What do you do if you are too tired to adequately perform your duties?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(d)(4) Establish a maximum limit on controller HOS, which may provide for an emergency deviation from the maximum limit if necessary for the safe operation of a pipeline facility.

D4-12: Does the operator implement specific fatigue countermeasures during: a) Any and all shift duty hours worked after the first 8 hours? b) Any and all hours worked between 2:00 a.m. and 6:00 a.m.? c) Any and all night shifts immediately following three successive nights? d) Any and all day or night shifts following four successive night shifts unless three nocturnal sleep cycles have been completed? • FAQs D.05 and D.07. Does your work schedule allow you to get enough sleep?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(d)(2) Educate controllers and supervisors in fatigue mitigation strategies and how off-duty activities contribute to fatigue;

Inspection Question	Procedures	Implementation	Inspector Notes
D2-1: Is fatigue education required to all controllers and control room supervisors? • Records must demonstrate that all controllers and supervisors have received the required fatigue training. • The content of training material for new controllers may include additional topics not necessary for experienced controllers • Education on fatigue mitigation strategies may be incorporated into OQ requirements or may be implemented as a separate training program. What training have you had on fatigue? What things can you do to help alleviate fatigue?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
D2-2: Is refresher fatigue education provided at regular intervals? • Refresher training should be provided on an annual basis (typically once per calendar year, not to exceed 15 months). How often do you have training on fatigue?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(d)(3) Train controllers and supervisors to recognize the effects of fatigue; and

Inspection Question	Procedures	Implementation	Inspector Notes
D3-4: Is the content of fatigue training adequate for training controllers and supervisors to recognize the effects of fatigue? • FAQ D-04. • Circadian rhythm effects on work performance • Time-on-task-fatigue effects on work performance • Effects of prescription and over-the-counter drugs on sleep and work performance • Uses of prescription sleep aids and alertness aids • Actions to be taken when controllers are self-identified or identified by colleagues or supervisors as being too fatigued to safely control the pipeline What is covered in your fatigue training?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(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:

Inspection Question	Procedures	Implementation	Inspector Notes
E0-1: Is the operator's alarm management plan a formal process that specifically identifies critical topical areas included in their program? • Operator may use other terms rather than "alarm", such as "alert." • Refer to FAQ E.04 for the definition for safety-related alarm and FAQ A.16 for definition of safety-related. • Operator should have a list of alarm setpoints for each safety-related point. • Alarm management should be included in the management of change process.	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

• International Society of Automation (ISA) 18 may be used for guidance.
• Typical critical topical areas are:
  ○ Alarm philosophy
  ○ Alarm identification
  ○ Alarm rationalization, not necessarily alarm reduction.
  ○ Detailed design
  ○ Implementation
  ○ Operation
  ○ Maintenance
  ○ Monitoring
  ○ Assessment (including a method to confirm effective controller response)
  ○ Internal audits
 	
Where can you find the alarm set point for each safety related point?			

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

Inspection Question	Procedures	Implementation	Inspector Notes
E1-1: Does the operator have a process to identify and correct inaccurate or malfunctioning alarms? • Operator must have a means to identify inaccurate alarms. • Operator should have formal process for controllers to report alarm problems and malfunctions. • Process should include requirements for prompt correction of alarm malfunctions. • Alarm reports and alarm inhibited reports are useful tools, but may not be a complete listing of alarms that fail to function as or when required. How do you identify inaccurate alarms? What is the process for reporting alarms that are malfunctioning or causing problems?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
E1-2: Does the review of safety-related alarms account for different alarm designs and all alarm types/priorities? • Operator must ensure soft (software calculated or "synthetic") alarms are accurate and can be identified by the controller. • Adequate procedures must be in place to explain the administrative controls for the disabling of safety -related alarms. • FAQ E.12. Alarm priorities used by the operator should differentiate alarm importance. Too many alarm priorities could lead to confusion and inconsistent response to alarms. • In evaluating whether alarms support safe operations, operators should account for type of alarm used, e.g., visual alarms are more likely to go unnoticed than alarms that are both audible and visual. Make a notation of the types of alarm used. • If there are differences in alarm design based on alarm priority, the operator should be able to explain the rationale for the chosen approach and its effect on ensuring controllers recognize and handle alarms efficiently. Do you know what alarms are calculated rather than actual data?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
E1-4: Does the review of safety-related alarms include specific procedures and practices for managing stale or unreliable data? • Adequate procedures should be in place for controllers to manage stale data. Reviews of safety related alarms should account for the	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records	

way controllers manage stale data. • The operator should have a procedure to insure errant or stale data sources are promptly remediated, in order to minimize adverse impact on safety related alarm capabilities. • Operators should account for errant or stale data when reviewing safety related alarms. The cause of errant or stale data should also be accounted for, including but not limited to, communication system errors, SCADA system errors, operational practices to take points off-scan or inhibit alarms, and other applicable causes. • Operators should be able to determine stale data for all points that impact safety or safety-related points. • Operators should be able to distinguish between stale or forced data in the RTU versus the SCADA system. How do you recognize stale data? How can you verify that the data is stale? What is the process for reporting errant or stale data?		☐ Interview	

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

Inspection Question	Procedures	Implementation	Inspector Notes

E2-1: Does the procedure require the monthly identification, recording, review, and analysis of points 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?
 	
• Documentation must include dates showing:
  ○ When points were taken off scan/inhibited/forced/manual,
  ○ When points were restored, and
  ○ The duration of outage.
• FAQ E.02 for false alarms.
• FAQ E.03 for alarms generated during testing.
• FAQ E.04 for safety related alarms and FAQ A.16 for definition of safety-related.
• FAQ E.05 for alarm setpoint values.
• Procedures must require the review of analysis of such points.
• Results of the review and analysis should be documented.
• Off scan points should be promptly restored to service.
How do you log information on data points that are:
• Taken off scan
• Have had alarms inhibited
• False alarms
• Forced values
 	
What information is recorded in the log?
	☐ SAT
	☐ UNSAT
		☐ SAT
		☐ UNSAT
		
		☐ Observed
		☐ Records
		☐ Interview	

E2-2: Does the operator's alarm management plan include a procedure for promptly correcting identified problems and for returning these points to service? • Operator should analyze problems to identify recurring or chronic issues that are not getting corrected promptly enough. • FAQ E.14. Are problems corrected promptly?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(e)(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; and

Inspection Question	Procedures	Implementation	Inspector Notes
E5-1: Does the operator's program have a means of identifying and measuring the work load (content and volume of general activity) being directed to an individual controller? • Process must have a sufficient degree of formality and documentation. Operators might implement this requirement by means of a job task analysis (JTA), formal workload study or other means. • "General activity" means any activity that is required of the controller. This includes, but is not limited to, pipeline operations, handling SCADA alarms, conducting shift change, greeting and responding to visitors, administrative tasks, impromptu requests, telephone calls, faxes, or other activities such as monitoring weather and news reports, training (including CBT), checking security and video surveillance systems, using the internet, and interacting with colleagues, supervisors, and managers. Operator should be able to describe the level of activity for each console, including (in cases of control rooms with multiple consoles) which console has the most activity and which has the least. • For continuous operations, operator should be able to describe the differences in the level of activity during weekdays/weekends, and during day/night shifts. • If the operator has added any significant assets or SCADA points since the previous review, the operator must account for this change in the next workload review. • If the operator has impressed other activities, not related to pipeline operation, onto the controller position, the operator should ascertain these activities do not undermine pipeline safety. • Measurement of workload should be performed during all periods of time, seasons, and shifts to account for variations in overall demands on controllers. What other tasks are you assigned in addition to monitoring the system?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
E5-3: Does the operator's program have a means of determining that the controller has sufficient time to analyze and react to incoming alarms? • Controller response metrics associated with alarm handling such as frequency of alarms (typically alarms per shift) received per console. • Criteria for acceptable controller performance in response to alarms. • Operators should place particular importance on proper and timely response to leak detection alarms. FAQ A.15 clarifies that leak detection systems, batch tracking systems and other special applications can be considered as an extension of the SCADA System and subject to CRM requirements. • [HL Only] See Advisory Bulletin ADB–10–01, "Leak Detection on Hazardous Liquid Pipelines" dated January 26, 2010 (75 FR 4134). • Operators may identify relevant alarm management practices by consulting with applicable industry standards such as International Society of Automation (ISA) 18. Analysis of increased activity as a result of failures, near misses, errors, operating experience, or	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

lessons learned and how they relate to volume of work. • FAQ E.08. Operators should identify the workload threshold that would lead to adding controllers and/or consoles. • Operators should document the results of the workload analysis and document the number of controllers and consoles needed to safety manage workload. • FAQ E.07. Credible reviews should identify the need to make adjustments as workload increases. Inspections should include discussions about any changes in the number of consoles in the past year, and if the operator has plans to change the workload on any console. • FAQs E.09 and E.13. How many alarms do you typically see in a shift? Do you feel you have enough time to recognize and react to alarms as they come in?			

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

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

Inspection Question		Procedures		Implementation		Inspector Notes
F1-4:	[Gas ONLY] Does the operator have a procedure to assure changes in field equipment that could affect control room operations are coordinated with the control room personnel? • FAQs F.01 and F.02. Procedures should include guidance or a description of what changes in field equipment would constitute the need to invoke change management provisions. • Management of Change process must also assure that controller training is updated to reflect the change and that controllers are adequately trained, as needed, on changes before the changes are placed into operation. • There should be a procedure to manage SCADA and data communications maintenance or configuration activities to assure controllers are aware of, review, and provide input, in advance of work. • The change management procedure should also be implemented when temporary changes are no longer necessary and operations are returned to normal. How are field changes communicated to the control room personnel?		SAT UNSAT N/A (HL)		SAT UNSAT N/A (HL) Observed Records Interview	
F1-5:	[Gas ONLY] Is there a procedure to mandate a control room representative will participate in meetings where changes that could directly or indirectly affect the hydraulic performance of the pipeline (including routine maintenance and repairs) are being considered, designed and implemented? • The control room representative must have sufficient technical and		SAT UNSAT N/A (HL)		SAT UNSAT N/A (HL) Observed Records Interview	

procedural familiarity with control room activities to adequately perform this task. • The control room representative must adequately communicate related information to all impacted controllers. • Records should include meeting topics and communiqué created for controllers. Are you included in meetings or notified of changes that could affect the operation of the system? How often does this occur?			

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

Inspection Question	Procedures	Implementation	Inspector Notes
F2-1: Does the operator have a process or procedure to require its field personnel and SCADA support personnel to contact the control room when emergency conditions exist? • Field personnel must communicate with the control room immediately upon discovery of an emergency condition. • Records must demonstrate that field personnel have contacted the control room whenever emergency conditions existed. How do field personnel and SCADA support personnel communicate with the controller during emergency conditions?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	
F2-2: Does the operator have and implement a procedure to require its field personnel and SCADA support personnel to contact the control room when making field changes (for example, moving a valve) that affect control room operations? • Field personnel must communicate with the control room before any equipment is being put into local control or returned to remote control. • Field personnel must communicate with the control room before any equipment is being taken out of service or returned to service. • Field personnel should alert the control room before personnel enter a SCADA-controlled facility (including but not limited to compressor/pump stations, meter stations, main-line valves, etc.), which is normally unattended. • Field personnel should be trained to call the controller when making field changes that have the potential to affect control room operations. Do field personnel and SCADA support personnel communicate information to the control room when field changes are being made that could affect control room operations? How are those communications done?	☐ SAT ☐ UNSAT	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	.

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

Inspection Question	Procedures	Implementation	Inspector Notes
F3-1: [Gas ONLY] Does management include control room or control room management participation in planning, prior to the implementation of significant pipeline hydraulic or configuration changes? Are you included in planning, prior to the implementation of	☐ SAT ☐ UNSAT ☐ N/A (HL)	☐ SAT ☐ UNSAT ☐ N/A (HL) ☐ Observed ☐ Records	

significant system changes?		Interview	

192.631(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 incidents that must be reported pursuant to 49 CFR part 191 to determine if control room actions contributed to the event and, if so, correct, where necessary, deficiencies related to: (i) Controller fatigue; (ii) Field equipment; (iii) The operation of any relief device; (iv) Procedures; (v) SCADA system configuration; and (vi) SCADA system performance.

Inspection Question	Procedures	Implementation	Inspector Notes
G1-1: Does the operator employ a formal, structured approach for reviewing and critiquing reportable events to identify lessons learned? • Operator must incorporate a methodology to determine the cause of the event. • Event cause analysis includes analysis of the potential contribution of controller or control room decisions/actions to the event. • A root cause analysis process should be used when applicable. • Secondary or contributing causes should be addressed. • Operator should address potential contribution of erroneous training. • When applicable, the operator's review and critique of actual failure experience should critique the adequacy of SCADA design and performance of both the primary and back-up systems. After a reportable event is meeting conducted analyze the actions performed and to determine lessons learned?	SAT UNSAT	SAT UNSAT Observed Records Interview	

192.631(g)(2) Include lessons learned from the operator's experience in the training program required by this section.

Inspection Question	Procedures	Implementation	Inspector Notes
G2-1: Is training provided on lessons learned from a broad range of events, even though the control room may not have been at fault?	SAT UNSAT	SAT UNSAT Observed Records Interview	

192.631(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:

Inspection Question	Procedures	Implementation	Inspector Notes
H0-1: Has the operator established and implemented a controller training program to provide training for each controller to carry out their roles and responsibilities? • CRM training program must provide training as appropriate to ensure that individuals performing "controller" activities (i.e., covered tasks) have the necessary knowledge and skills to perform	SAT UNSAT N/A	SAT UNSAT N/A Observed Records Interview	

the tasks in a manner that ensures the safe operation of pipeline facilities. • Records must demonstrate that each controller has successfully completed the controller OQ and CRM training program, including requalification training. • Records must include names and dates of training. • All elements of OQ and CRM training must be documented on training records. • Training program can address cross-training on consoles not normally used, but cross-training to other consoles is not required. What training have you had for performing your duties as a controller?	☐ UNSAT ☐ N/A	☐ UNSAT ☐ N/A ☐ Observed ☐ Records ☐ Interview	

192.631(h)(2) Use of a computerized simulator or non-computerized (tabletop) method for training controllers to recognize abnormal operating conditions;

Inspection Question	Procedures	Implementation	Inspector Notes
H2-1: Does the operator's training program use a simulator or tabletop exercises to train controllers how to recognize and respond to abnormal operating conditions? • Operators must use either or both computerized and non-computerized (tabletop) method for simulator training. • The training must require that controllers demonstrate proficiency in recognizing and responding to abnormal conditions based on actual scenarios from reportable accidents/incidents and likely abnormal situations in order to prevent or mitigate future similar conditions. • Operators are not required to use of a computerized training simulator. Well thought out and interactive tabletop exercises are likely to be used by smaller operators. • If computerized simulators are used, consoles should be clearly labeled to avoid controller/trainee from confusing a live console with a training console. • Use of simulator should be more than just interacting with SCADA system. Simulator training should also include use of related operational and emergency procedures and interaction with others. Have you gone through a simulation of abnormal operating conditions during this training? How is this done?	☐ SAT ☐ UNSAT ☐ Simulator ☐ Tabletop	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	

192.631(h)(3) Training controllers on their responsibilities for communication under the operator's emergency response procedures;

Inspection Question	Procedures	Implementation	Inspector Notes
H3-1: Does the operator's program train controllers on their responsibilities for communication under the operator's emergency response procedures? • The training program must require that controllers demonstrate knowledge and proficiency in communicating during an	☐ SAT ☐ UNSAT ☐ N/A	☐ SAT ☐ UNSAT ☐ N/A ☐ Observed ☐ Records	

emergency. • The operator should have controllers participate in accident/incident drills. Have you had training on communication during an emergency response situation? What is the process for this communication?		☐ Interview	

192.631(h)(4) Training that will provide a controller a working knowledge of the pipeline system, especially during the development of abnormal operating conditions; and

Inspection Question	Procedures	Implementation	Inspector Notes
H4-1: Does the operator training program provide controllers a working knowledge of the pipeline system, especially during the development of abnormal operating conditions? • Training must ensure that controllers have practical knowledge of how fluid dynamics, electrical power, communications, etc. impact operations. • Training must include information about how pressure and flow in all pipeline segments are impacted by control actions. • Training must include any facilities that are different than typical. • Training should include information (within the controller's domain of responsibility) about flexibility and limitations at inlet points, mainline valves, stations and delivery points. • Training must include MAOPs/MOPs, and any imposed lower pressures, on all pipeline segments. What training have you had regarding how the gas system operates?	☐ SAT ☐ UNSAT ☐ N/A	☐ SAT ☐ UNSAT ☐ Observed ☐ Records ☐ Interview	