

Results and Notes Review

CR.CRMGEN: General

Question ID, References [CR.CRMGEN.CRMCRITERIA.P](#) , 195.446(a)

Question Text *Does the process adequately address criteria by which the operator determines which of its facilities are control rooms?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Maintenance Manual Section D-17 Subsection 1.1**

Question ID, References [CR.CRMGEN.CRMMGMT.P](#) , 195.446(a)

Question Text *Are CRM procedures formalized and controlled?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Operations Manual Section 3, Reviewed 14-10 Pre-startup Procedures, 14-20 Pipeline Startup Procedure for revision.**

Question ID, References [CR.CRMGEN.CRMIMPLEMENT.R](#) , 195.446(a)

Question Text *Were procedures approved, in place, and implemented on or before the regulatory deadline?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Fatigue Management added 8/2011, with the remainder incorporated by June 2012.**

Question ID, References [CR.CRMGEN.CRMPROCLOCATION.O](#) , 195.446(a)

Question Text *Are procedures readily available to controllers in the control room?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes Procedures for McChord pipeline were readily available at the controller console and included a table showing the pipeline MOP of 720 PSI.

CR.CRMRR: Roles and Responsibilities

Question ID, References [CR.CRMRR.RESPONSIBLE.P](#) , 195.446(b)(1)

Question Text *Are there clear processes to describe each controller's physical domain of responsibility for pipelines and other facility assets?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Operations Manual Section II subsection 1 Operator and Supervision Responsibilities**

Question ID, References [CR.CRMRR.QUALCONTROL.P](#) , 195.446(b)(1)

Question Text *Are there provisions in place to assure that only qualified individuals may assume control at any console/desk?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Operations superintendent on days schedules qualified operators for each shift.**

Question ID, [CR.CRMRR.DOMAINCHANGE.P](#) , 195.446(b)(1)

References

Question Text *If the physical domain of responsibility periodically changes, has a clear process been established to describe the conditions for when such a change occurs?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **Physical domain of responsibility does not change.**

Question ID, References [CR.CRMRR.RESPCHANGE.P](#) , 195.446(b)(1)

Question Text *Do processes address a controller's role during temporary impromptu (unplanned) changes in controller responsibilities?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **A-Reformer Operation Position description defines procedures for Outside breaks so that the one controller can monitor both stations. Operator on break also is in contact with radio.**

Question ID, References [CR.CRMRR.COMMANDVERIFY.P](#) , 195.446(b)(1)

Question Text *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?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Controllers are responsible for scheduling any operations around shift changes and breaks.**

Question ID, References [CR.CRMRR.AUTHORITYABNORMAL.P](#) , 195.446(b)(2)

Question Text *Have processes been established to define the controllers' authority and responsibilities when an abnormal operating condition is detected?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Standing Order S-27 (Rev 07/2013) Execution of Process Procedures and Emergency Procedures and Standing Order PL-8 (Rev 10/2013) describing the shutdown of P-1401 pumps.

Question ID, References [CR.CRMRR.PRESSLIMITS.O](#) , 195.446(b)(2)

Question Text *Are controllers aware of the current 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 MOP?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Procedures for McChord pipeline were readily available at the controller console and included a table showing the pipeline MOP of 720 PSIG. Standing Order PL-2 (Rev 10/2013) instructs operator to never allow pipeline pressure to exceed 720 PSIG.

Question ID, References [CR.CRMRR.AUTHORITYEMERGENCY.P](#) , 195.446(b)(3)

Question Text *Do processes define 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?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Standing Order S-27 (Rev 07/2013) Execution of Process Procedures and Emergency Procedures and Standing Order PL-8 (Rev 10/2013) describing the shutdown of P-1401 pumps.

Question ID, [CR.CRMRR.EVACUATION.P](#) , 195.446(b)(3)

References

Question Text *Do processes specifically address the controller's responsibilities in the event the control room must be evacuated?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **As part of Emergency Refinery Shutdown (EPCR-20, Rev 5/1/2013) the McChord pipeline 1401 pump is tripped if running.**

Question ID, References [CR.CRMRR.COMMSYSFAIL.P](#) , 195.446(b)(3)

Question Text *Do processes 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?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Operations manual Section IV. Abnormal Operations, subsection 4. Communication Failure Action (Rev 10/2012)**

Question ID, References [CR.CRMRR.HANDOVER.P](#) , 195.446(b)(4) (195.446(c)(5))

Question Text *Have processes been established for the hand-over of responsibility that specify the type of information to be communicated to the oncoming shift?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Operations Manual, Section II. Subsection 6 Shift Turnover Procedure directs operator to review operations and safety conditions with the next person on shift. Must be face to face conversations.**

Question ID, [CR.CRMRR.HANDOVERDOC.P](#) , 195.446(b)(4) (195.446(c)(5))

References

Question Text *Do processes 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?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Operations Manual, Section II. Subsection 6 Shift Turnover Procedure directs operator to review operations and safety conditions with the next person on shift. Must be face to face conversations. Time Date of Shift change is documented in Controllers log book.

**Question ID,
References**

[CR.CRMRR.HANDOVERDOC.R](#) , 195.446(b)(4) (195.446(c)(5))

Question Text *Are there records that 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?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Operations Manual, Section II. Subsection 6 Shift Turnover Procedure directs controller to review operations and safety conditions with the next person on shift. Must be face to face conversations. Current procedures record shift change in the operators log.

**Question ID,
References**

[CR.CRMRR.HANDOVEROVERLAP.P](#) , 195.446(b)(4)

Question Text *Do processes require the controllers to discuss recent and impending important activities ensuring adequate overlap?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Operations Manual, Section II. Subsection 6 Shift Turnover Procedure directs controller to review operations and safety conditions with the next person on shift. Must be face to face conversations.

Question ID, References [CR.CRMRR.HANDOVERALTERNATIVE.P](#) , 195.446(b)(4)

Question Text *When a controller is unable to continue or assume responsibility for any reason, do the shift hand-over processes include alternative shift hand-over actions that specifically address this situation?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Standing Orders P-11 cover on shift, fit for duty. G-15, call in sick, contact the shift supervisor. Shift supervisor has a list of available on call personnel to provide backup operators.**

Question ID, References [CR.CRMRR.UNATTENDCONSOLE.P](#) , 195.446(b)(4)

Question Text *Has the operator established an adequate process for occasions when the console is left temporarily unattended for any reason?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **A-Reformer Operation Position description defines procedures for Outside breaks so that the one controller can monitor both stations. Operator on break also is in contact with radio.**

Question ID, References [CR.CRMRR.CONSOLECOVERAGE.P](#) , 195.446(b)(4)

Question Text *Do processes maintain adequate console coverage during shift hand-over?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Shift handover occurs at the console.**

CR.SCADA: Supervisory Control and Data Acquisition

Question ID, References [CR.SCADA.SYSTEMMOC.P](#) , 195.446(c)(1)

Question Text *Do processes clearly define the types of changes to the SCADA system(s) that constitute additions, expansions, or replacements under the meaning of the CRM rule?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Maintenance manual Section D-18, Subsection 1.2 (Rev 6/12)**

Question ID, References [CR.SCADA.DISPLAYCONFIG.P](#) , 195.446(c)(1)

Question Text *Are there written processes to implement the API RP 1165 display standards to the SCADA systems that have been added, expanded, or replaced since August 1, 2012?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Maintenance manual Section D-18, Subsection 1.2 (Rev 6/12)**

Question ID, References [CR.SCADA.1165HUMANFACTORS.R](#) , 195.446(c)(1)

Question Text *Has section 4 of API RP 1165 regarding human factors engineering been implemented?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **No, Current operations are grandfathered and no changes have been made to date. They do perform a Human Factors analysis for the control room every 5 years as part of their Safety Management Program. As part of that, a Hazard Analysis follows API's protocol in document API Human Factors Tool for Existing Operations.(pub Feb 06)**

Question ID, [CR.SCADA.DISPLAYHARDWARE.R](#) , 195.446(c)(1)

References

Question Text *Has section 5 of API RP 1165 regarding display hardware been implemented?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.**

Question ID, References [CR.SCADA.DISPLAYLAYOUT.R](#) , 195.446(c)(1)

Question Text *Has section 6 of API RP 1165 regarding display layout and organization been implemented?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **Current operations are grandfathered and no changes have been made to date.**

Question ID, References [CR.SCADA.DISPLAYNAVIGATION.R](#) , 195.446(c)(1)

Question Text *Has section 7 of API RP 1165 regarding display navigation been implemented?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.**

Question ID, References [CR.SCADA.DISPLAYOBJECTS.O](#) , 195.446(c)(1)

Question Text *Has section 8 of API RP 1165 regarding display object characteristics been implemented?*

Result NA

Assets Covered Unit McChord CRM

Result Notes Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.

Question ID, References [CR.SCADA.DISPLAYDYNAMICS.R](#) , 195.446(c)(1)

Question Text *Has section 9 of API RP 1165 regarding display object dynamics been implemented?*

Result NA

Assets Covered Unit McChord CRM

Result Notes Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.

Question ID, References [CR.SCADA.CONTROLSELECTION.R](#) , 195.446(c)(1)

Question Text *Has section 10 of API RP 1165 control selection and techniques been implemented?*

Result NA

Assets Covered Unit McChord CRM

Result Notes Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.

Question ID, References [CR.SCADA.ADMINISTRATION.R](#) , 195.446(c)(1)

Question Text *Has section 11 of API RP 1165 administration been implemented?*

Result NA

Assets Covered Unit McChord CRM

Result Notes Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.

Question ID, References [CR.SCADA.1165IMPRACTICAL.R](#) , 195.446(c)(1)

Question Text *If any/all applicable paragraph(s) of API RP 1165 have not been implemented, has it been demonstrated and documented that the unimplemented provisions are impractical for the SCADA system used?*

Result NA

Assets Covered Unit McChord CRM

Result Notes Current operations are grandfathered and no changes have been made to date. Operator system may be compliant but that has not been assessed. Operator uses a Distributed Control System that is consistent with Refinery Control System Practices to control the pipeline.

Question ID, References [CR.SCADA.SETPOINT.P](#) , 195.446(c)(2) (195.406(b))

Question Text *Does the process adequately define safety-related points?*

Result Sat

Assets Covered Unit McChord CRM

Result Notes 34 control points are defined in the McChord Operations Manual Appendix Section 3. All control points are considered safety-related points.

Question ID, References [CR.SCADA.SETPOINT.R](#) , 195.446(c)(2)

Question Text *Do records indicate safety-related points have been adequately implemented?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Per Maintenance Standing Order # G-33, point to point verification is performed whenever instruments change. Also an annual point to point verification of all safety-related points is performed, not to exceed 15 months, per Maintenance Manual D-1.

Question ID, References [CR.SCADA.POINTVERIFY.P](#) , 195.446(c)(2)

Question Text *Are there adequate processes to define and identify the circumstances which require a point-to-point verification?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Per Maintenance Standing Order # G-33, point to point verification is performed whenever instruments change. Also an annual point to point verification of all safety-related points is performed, not to exceed 15 months, per Maintenance Manual D-1.

Question ID, References [CR.SCADA.POINTVERIFY.R](#) , 195.446(c)(2)

Question Text *Have required point-to-point verifications been performed?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Point to point verifications (called loop checks) are generated anytime an alarm-point changes in the system.

Question ID, References [CR.SCADA.POINTVERIFYEXTENT.P](#) , 195.446(c)(2)

Question Text *Are there adequate processes for the thoroughness of the point-to-point verification?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Point to Point verification (Loop Check) are performed anytime a change is made in the system. Annual verifications (loop check) are performed using MAXIMO work orders. Reviewed several and they appear to be adequate.

Question ID, References [CR.SCADA.POINTVERIFYEXTENT.R](#) , 195.446(c)(2)

Question Text *Do records demonstrate adequate thoroughness of the point-to-point verification?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Point to Point verification (Loop Check) are performed anytime a change is made in the system. Annual verifications (loop check) are performed using MAXIMO work orders. Reviewed several and they appear to be adequate.

Question ID, References [CR.SCADA.POINTVERFIYINTVL.P](#) , 195.446(c)(2)

Question Text *Is there an adequate process for defining when the point-to-point verification must be completed?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Point to Point verification (Loop Check) are performed anytime a change is made in the system. Annual verifications (loop check) are performed using MAXIMO work orders. Reviewed several and they appear to be adequate.

Question ID, References [CR.SCADA.POINTVERFIYINTVL.R](#) , 195.446(c)(2)

Question Text *Do records indicate the point-to-point verification has been completed at the required intervals?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Point to Point verification (Loop Check) are performed anytime a change is made in the system. Annual verifications (loop check) are performed using MAXIMO work orders. Reviewed several and they appear to be adequate.**

Question ID, References [CR.SCADA.COMMPLAN.P](#) , 195.446(c)(3)

Question Text *Has an internal communication plan been established and implemented that is adequate to manually operate the pipeline during a SCADA failure/outage?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Operations Manual Section IV.6, "Other Plant Problems"**

Question ID, References [CR.SCADA.COMMPLAN.R](#) , 195.446(c)(3)

Question Text *Has the internal communication plan been tested and verified for manual operation of the pipeline safely at least once each calendar year but at intervals not exceeding 15 months?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **WO 445462 was the Test Internal Communication Plan for Safe Manual Operation performed on 7/24/2013.**

Question ID, References [CR.SCADA.BACKUPSCADA.O](#) , 195.446(c)(4)

Question Text *Is there a backup SCADA system?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes Operator has backup systems for their Distributed Control System.

Question ID, References [CR.SCADA.BACKUPSCADADEV.P](#) , 195.446(c)(4)

Question Text *Has the use of the backup SCADA system for development work been defined?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes An Engineering Work Station is part of the Distributed Control System at the refinery.

Question ID, References [CR.SCADA.BACKUPSCADATEST.R](#) , 195.446(c)(4)

Question Text *Is the backup SCADA system tested at least once each calendar year at intervals not to exceed 15 months?*

Result **Sat**

Assets Covered Unit McChord CRM

Question ID, References [CR.SCADA.BACKUPSCADAVERIFY.R](#) , 195.446(c)(4)

Question Text *Does the testing verify that there are adequate processes in place for decision-making and internal communications to successfully implement a transition from primary SCADA to backup SCADA, and back to primary SCADA?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Backup system is tested annually. Last test was 2/27/2014 per WO 475230.

Question ID, References [CR.SCADA.BACKUPSCADAADDEQUACY.R](#) , 195.446(c)(4)

Question Text *If the back-up SCADA system is not designed to handle all the functionality of the main SCADA system, does the testing determine whether there are adequate procedures in place to account for displaced and/or different available functions during back-up operations?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Back-up system has same functionality as the regular system.**

Question ID, References [CR.SCADA.BACKUPSCADATRANSFER.P](#) , 195.446(c)(4)

Question Text *Do processes adequately address and test the logistics of transferring control to a backup control room?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **No backup control room, but there are additional control consoles that can be accessed.**

Question ID, References [CR.SCADA.BACKUPSCADARETURN.P](#) , 195.446(c)(4)

Question Text *Do procedures adequately address and test the logistics of returning operations back to the primary control room?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **McChord does have a backup control room but their Distributed Control System can be accessed from multiple points.**

Question ID, References [CR.SCADA.BACKUPSCADAFUNCTIONS.R](#) , 195.446(c)(4)

Question Text *Is a representative sampling of critical functions in the back-up SCADA system being tested to ensure proper operation in the event the backup system is needed?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **McChord operates one Distributed Control System that includes redundancy.**

CR.CRMFM: Fatigue Management

Question ID, References [CR.CRMFM.FATIGUEMITIGATION.P](#) , 195.446(d)

Question Text *Does the fatigue mitigation process or procedures (plan) identify operator-specific fatigue risks?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Admin Manual Section A-2, Fatigue Mitigation Program (Rev 6/2012)**

Question ID, References [CR.CRMFM.FATIGUERISKS.P](#) , 195.446(d)

Question Text *Does the fatigue mitigation plan adequately address how the program reduces the risk associated with controller fatigue?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Pipeline fatigue management is based on "Fatigue Risk Management Systems for Personnel in the Refining and Petrochemical Industries." API RP 755 as a guidance standard.**

Question ID, References [CR.CRMFM.FATIGUEQUANTIFY.P](#) , 195.446(d)

Question Text *Do processes require that the potential contribution of controller fatigue to incidents and accidents be quantified during investigations?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [McChord Admin A-4, section 1](#)

Question ID, References [CR.CRMFM.FATIGUEMANAGER.P](#) , 195.446(d)

Question Text *Is there a designated fatigue risk manager who is responsible and accountable for managing fatigue risk and fatigue countermeasures, and someone (perhaps the same person) that is authorized to review and approve HOS emergency deviations?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [The Refinery Manager reviews Hours Of Service, along with the HR manger, to insure HOS are not exceeded.](#)

Question ID, References [CR.CRMFM.SHIFTLENGTH.R](#) , 195.446(d)(1)

Question Text *Is the scheduled shift length less than or equal to 12 hours (not including shift hand-over) or is there a documented technical basis to show that shift lengths and schedule rotations are adequate to provide controllers off-duty time sufficient to achieve 8 hours of continuous sleep?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Shift length is 12 hours.](#)

Question ID, References [CR.CRMFM.SHIFTLENGHTIME.R](#) , 195.446(d)(1)

Question Text *Does the operator factor in all time the individual is working for the company when establishing shift lengths and schedule rotations or is there a documented technical basis to show that shift lengths and schedule rotations are adequate to provide controllers off-duty time sufficient to achieve 8 hours of continuous sleep?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Rotation of 4 teams.](#)

Question ID, References [CR.CRMFM.SCHEDULEDTIMEOFF.R](#) , [195.446\(d\)\(1\)](#)

Question Text *Are all scheduled periods of time off at least one hour longer than 8 hours plus commute time or is there a documented technical basis to show that shift lengths and schedule rotations are adequate to provide controllers off-duty time sufficient to achieve 8 hours of continuous sleep?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Question ID, References [CR.CRMFM.ONCALLCONTROLLER.R](#) , [195.446\(d\)\(1\)](#)

Question Text *For controllers who are on call, does the operator minimize interrupting the required 8 hours of continuous sleep or is there a documented technical basis to show that shift lengths and schedule rotations are adequate to provide controllers off-duty time sufficient to achieve 8 hours of continuous sleep?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Question ID, References [CR.CRMFM.MAXHOS.P](#) , [195.446\(d\)\(4\)](#)

Question Text *Do processes limit the maximum HOS limit in any sliding 7 day period to no more than 65 hours or is there a documented technical basis to show reduction of the risk associated with controller fatigue?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Refinery Manger and HR manager monitor Hours Of Service for all operators.](#)

Question ID, References [CR.CRMFM.MINTIMEOFF.P](#) , 195.446(d)(4)

Question Text *After reaching the HOS limit in any sliding 7 day period, is the minimum time off at least 35 hours or is there a documented technical basis to show a reduction of the risk associated with controller fatigue?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Admin manual A-2 section 2,**

Question ID, References [CR.CRMFM.DOCSCHEDULE.P](#) , 195.446(d)(4)

Question Text *Is there a formal system to document all scheduled and unscheduled HOS worked, including overtime and time spent performing duties other than control room duties?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Question ID, References [CR.CRMFM.DAYSOFF.P](#) , 195.446(d)(4)

Question Text *For normal business hour type operations (i.e., five days per week), are no more than five days worked in succession before at least two days off?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **The refinery operates 7 days a week, 24 hours per day . Operator max is four 12 hour shifts in a row.**

Question ID, References [CR.CRMFM.WORKHOURS.R](#) , 195.446(d)(4)

Question Text *For normal business hour type operations (i.e., five days per week), do records indicate shift start times no earlier than 6:00 a.m. and shift end times no later than 7:00 p.m.?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **The refinery operates 7 days a week, 24 hours per day . Operator max is four 12 hour shifts in a row.**

Question ID, References [CR.CRMFM.FATIGUECOUNTERMEASURES.P](#) , 195.446(d)(4)

Question Text *For shifts longer than 8 hours, have specific fatigue countermeasures been implemented for the ninth and beyond hours?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Coffee, adjustable console height, and exercise equipment within view of the console.**

Question ID, References [CR.CRMFM.DAILYHOSLIMIT.P](#) , 195.446(d)(4)

Question Text *Do processes limit the daily maximum HOS limit to no more than 14 hours in any sliding 24-hour period?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Daily HOS is 12 hours.**

Question ID, References [CR.CRMFM.CONTROLLERNUMBERS.O](#) , 195.446(d)(4)

Question Text *Do operations include a sufficient number of qualified controllers?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord currently has 7 qualified controllers.**

Question ID, References [CR.CRMFM.OFFDUTYHOURS.P](#) , 195.446(d)(4)

Question Text *Do processes ensure that controllers are provided with at least thirty-five (35) continuous off-duty hours when limits are reached following the most recent 35-hour (minimum) off-duty rest period or is there a documented technical basis to show that the maximum limit on controller HOS is adequate to reduce the risk associated with controller fatigue?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Admin Manual Section A-2, Subsection 2, Shi9ft Lengths and Rotation.**

Question ID, References [CR.CRMFM.SHIFTHOLDOVER.P](#) , 195.446(d)(4)

Question Text *Does the shift holdover process conform to shift holdover guidelines or is there a documented technical basis to show that the maximum limit on controller HOS is adequate to reduce the risk associated with controller fatigue?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Administrative Manual Section A-2, Subsection 2.2**

Question ID, References [CR.CRMFM.SPECIFICCOUNTERMEASURES.P](#) , 195.446(d)(4)

Question Text *Do processes require specific fatigue countermeasures during applicable time periods, or is there a documented technical basis to show that the maximum limit on controller HOS is adequate to reduce the risk associated with controller fatigue?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Encourage operators to adjust consoles and walk around, even to do some light exercise. Coffee is available.**

Question ID, References [CR.CRMFM.HOSDEVIATIONS.P](#) , 195.446(d)(4)

Question Text *Is there a formal process for approving deviations from the maximum HOS limits?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Any changes from Subsection 2.2 would require the Operations Manager approval.**

Question ID, References [CR.CRMFM.FATIGUEEDUCATE.P](#) , 195.446(d)(2) (195.446(d)(3))

Question Text *Does the program require that fatigue education/training is required for all controllers and control room supervisors?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Yes, operators and supervisors are trained tin Fatigue Management annually. Training is per McChord Amin Manual Section A-2, subsection 3. Training**

Question ID, References [CR.CRMFM.FATIGUEEDUCATE.R](#) , 195.446(d)(2) (195.446(d)(3))

Question Text *Is fatigue education/training documented for all controllers and control room supervisors?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Question ID, References [CR.CRMFM.FATIGUEREFRASHER.R](#) , 195.446(d)(2) (195.446(d)(3))

Question Text *Is refresher fatigue education provided at regular intervals?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Reviewed training records for current A Reformer personnel. Training was held annually.](#)

**Question ID,
References**

[CR.CRMFM.FATIGUEREVIEW.P](#) , [195.446\(d\)\(2\)](#) ([195.446\(d\)\(3\)](#))

Question Text *Do processes require that the effectiveness of the fatigue education/training program be reviewed at least once each calendar year, not to exceed 15 months?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Learning verification through tests or quizzes, and effectiveness of training is solicited from trainees.](#)

**Question ID,
References**

[CR.CRMFM.FATIGUESTATEGY.P](#) , [195.446\(d\)\(2\)](#)

Question Text *Does fatigue education address fatigue mitigation strategies (countermeasures)?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

**Question ID,
References**

[CR.CRMFM.OFFDUTY.P](#) , [195.446\(d\)\(2\)](#)

Question Text *Does fatigue education address how off-duty activities contribute to fatigue?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

**Question ID,
References**

[CR.CRMFM.FATIGUECONTENT.P](#) , [195.446\(d\)\(3\)](#)

Question Text *Is the content of fatigue training adequate for training controllers and supervisors to recognize the effects of*

Question ID, [CR.CRMFM.FATIGUECONTENT.R](#) , [195.446\(d\)\(3\)](#)

References

Question Text *Has controller and supervisor training to recognize the effects of fatigue been documented?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Yes, operators and supervisors are trained in Fatigue Management annually. Training is per McChord Admin Manual Section A-2, subsection 3. Training

CR.CRMAM: Alarm Management

**Question ID,
References** [CR.CRMAM.ALARM.P](#) , 195.446(e)

Question Text *Is the alarm management plan a formal process that specifically identifies critical topical areas included in the program?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Admin Manual Section A-5. ,

**Question ID,
References** [CR.CRMAM.ALARMMALFUNCTION.P](#) , 195.446(e)(1)

Question Text *Is there a process to identify and correct inaccurate or malfunctioning alarms?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Admin Manual Section A-5. Subsection 5.2

**Question ID,
References** [CR.CRMAM.ALARMREVIEW.P](#) , 195.446(e)(1)

Question Text *Does the review of safety-related alarms account for different alarm designs and all alarm types/priorities?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Established standards for presentation and audible alarms based on the alarm priority. McChord has three alarm categories, Critical, High, and Low.**

Question ID, References [CR.CRMAM.CONTROLLERPERFORMANCE.P](#) , 195.446(e)(1)

Question Text *Does the review of safety-related alarms account for individual-specific controller qualification and performance?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **All controller consoles use the same format for color, displays and audio signals.**

Question ID, References [CR.CRMAM.STALEDATA.P](#) , 195.446(e)(1)

Question Text *Does the review of safety-related alarms include specific procedures and practices for managing stale or unreliable data?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **Controllers do not work with stale data. Readings are updated at least every second. Unreliable data is tagged for repair.**

Question ID, References [CR.CRMAM.MONTHLYANALYSIS.P](#) , 195.446(e)(2)

Question Text *Do processes 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?

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Monthly list of review of all suppressed alarms and tags throughout the refinery. Circulated to stakeholders.

Question ID, References [CR.CRMAM.PROBLEMCORRECTION.P](#) , 195.446(e)(2)

Question Text *Does the alarm management plan include a process for promptly correcting identified problems and for returning these points to service?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Administrative Section A-5 subsection 5.2

Question ID, References [CR.CRMAM.ALARMSETPOINTS.P](#) , 195.446(e)(3)

Question Text *Is there a formal process to determine the correct alarm setpoint values and alarm descriptions?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Maintenance Standing Order MPL-1, Annually a Preventative Maintenance Work Order is generated and team reviews all set points-and descriptions for the pipeline safety-related points.

Question ID, References [CR.CRMAM.SETTINGCONTROL.P](#) , 195.446(e)(3)

Question Text *Have procedures been established to clearly address how and to what degree controllers can change alarm limits or setpoints, or inhibit alarms, or take points off-scan?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Process Safety Management Manual Section 8, Subsection 5.4. Controllers cannot change alarm limits or set points without following Subsection 5.4 Alarm Changes. McChord Admin Manual Section A-5 Subsection 3.2. covers inhibiting alarms.**

Question ID, References [CR.CRMAM.VERIFICATION.P](#) , 195.446(e)(3)

Question Text *Do processes require that any calibration or change to field instruments require verification of alarm setpoints and alarm descriptions?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Maintenance Standing Order MPL-1, Annually a Preventative Maintenance Work Order is generated and team reviews all set points-and descriptions for the pipeline safety-related points.**

Question ID, References [CR.CRMAM.PLANREVIEW.P](#) , 195.446(e)(4)

Question Text *Are there processes to review the alarm management plan at least once each calendar year, but at intervals not exceeding 15 months, in order to determine the effectiveness of the plan?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Pipeline Administrative manual section A-5 Subsection 5.7**

Question ID, References [CR.CRMAM.PLANREVIEW.R](#) , 195.446(e)(4)

Question Text *Do records indicate review of the alarm management plan at least once each calendar year, but at intervals not exceeding 15 months, in order to determine the effectiveness of the plan?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Work Order 445463 completed 12/3/13. Review of Alarm Management Plan, annual](#)

Question ID, References [CR.CRMAM.WORKLOAD.P](#) , 195.446(e)(5)

Question Text *Does the CRM program have a means of identifying and measuring the work load (content and volume of general activity) being directed to an individual controller?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Job Task Analysis performed annually by randomly monitoring the work load on a controller, then reviewing the type and frequency of tasks required by the operator.](#)

Question ID, References [CR.CRMAM.WORKLOADMONITORING.P](#) , 195.446(e)(5)

Question Text *Is the process of monitoring and analyzing general activity comprehensive?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes [Maintenance Standing Order MPL-1, Annually a Preventative Maintenance Work Order is generated and team reviews all set points-and descriptions for the pipeline safety-related points.](#)

Question ID, References [CR.CRMAM.CONTROLLERREACTION.P](#) , 195.446(e)(5)

Question Text *Does the process have a means of determining that the controller has sufficient time to analyze and react to incoming alarms?*

Result **Sat**

Assets Covered [Unit McChord CRM](#)

Result Notes Maintenance Standing Order MPL-1, Annually a Preventative Maintenance Work Order is generated and team reviews all set points-and descriptions for the pipeline safety-related points.

Question ID, References [CR.CRMAM.PERFORMANCEANALYSIS.R](#) , 195.446(e)(5)

Question Text *Has an analysis been performed to determine if controller(s) performance is currently adequate?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Work Order 434715 completed on 8/27/2013.

Question ID, References [CR.CRMAM.DEFICIENCIES.P](#) , 195.446(e)(6)

Question Text *Is there a process to address how deficiencies found in implementing 195.446(e)(1) through 195.446(e)(5) will be resolved?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Admin Manual Section A-5 subsection 5.8.

Question ID, References [CR.CRMAM.DEFICIENCIES.R](#) , 195.446(e)(6)

Question Text *Do records indicate deficiencies found in implementing 195.446(e)(1) through 195.446(e)(5) have been resolved?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Work Order 434715 completed on 8/27/2013.

CR.CRMCMGT: Change Management

Question ID, References [CR.CRMCMGT.CHANGEMEETINGS.P](#) , 195.446(f)(1)

Question Text *Is there a process to mandate a control room representative will participate in meetings where changes that could directly or indirectly affect control room operations (including routine maintenance and repairs) are being considered, designed and implemented?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Admin Manual Section A-3 , USOR MOC Program meets all the requirements of 49 CFR 195.446(f) and API RP 1168 Section 7.

Question ID, References [CR.CRMCMGT.CHANGETRAINING.R](#) , 195.446(f)(1)

Question Text *Before implementing changes, do records indicate controllers were provided with notification and training to assure their ability to safely incorporate the proposed change into operations?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes No changes have been made on the McChord pipeline during this time period.

Question ID, References [CR.CRMCMGT.EMERGENCYCONTACT.P](#) , 195.446(f)(2)

Question Text *Is there a process requiring field personnel and SCADA support personnel to contact the control room when emergency conditions exist?*

Result **Sat**

Assets Covered Unit McChord CRM

Question ID, References [CR.CRMCMGT.CHANGECOORDINATION.P](#) , 195.446(f)(1)

Question Text *Does the process assure changes in field equipment (for example, moving a valve) that could affect control room operations are coordinated with control room personnel?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Admin Manual Section A-3, subsection 4.**

Question ID, References [CR.CRMCMGT.CHANGECOORDINATION.R](#) , 195.446(f)(1)

Question Text *Do records indicate that changes in field equipment (for example, moving a valve) that could affect control room operations were coordinated with control room personnel?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Question ID, References [CR.CRMCMGT.FIELDCONTACT.P](#) , 195.446(f)(2)

Question Text *Does the process require 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?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Admin Manual Section A-3 , USOR MOC Program meets all the requirements of 49 CFR 195.446(f) and API RP 1168 Section 7.**

Question ID, References [CR.CRMCMGT.FIELDCHANGES.R](#) , 195.446(f)(2)

Question Text *Do records indicate field personnel and SCADA support personnel contacted the control room when making*

field changes (for example, moving a valve) that affect control room operations?

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Daily log book indicates that communication to the field occurs prior to pipeline start and stop. Reviewed sample of log entries for pipeline.**

CR.CRMEXP: Operating Experience

Question ID, References [CR.CRMEXP.ABNORMALREVIEW.P](#) , 195.446(g)(1)

Question Text *Is there a formal, structured approach for reviewing and critiquing reportable events to identify lessons learned?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Accident review, McChord Admin Section A-4, subsection 1.**

Question ID, References [CR.CRMEXP.ABNORMALREVIEW.R](#) , 195.446(g)(1)

Question Text *Do records indicate reviews of reportable events specifically analyzed all contributing factors to determine if control room actions contributed to the event, and corrected any deficiencies?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **No reportable events on McChord pipeline.**

Question ID, References [CR.CRMEXP.LESSONSLEARNED.P](#) , 195.446(g)(2)

Question Text *Does the program require training on lessons learned from a broad range of events (reportable incidents/accidents, near misses, leaks, operational and maintenance errors, etc.), even though the control room may not have been at fault?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Accident review, McChord Admin Section A-4, subsection 1.**

Question ID, References [CR.CRMEXP.LESSONSLEARNED.R](#) , 195.446(g)(2)

Question Text *Has operating experience review training been conducted on lessons learned from a broad range of events (reportable incidents/accidents, near misses, leaks, operational and maintenance errors, etc.)?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **No reportable events on McChord pipeline.**

CR.CRMTRAIN: Training

Question ID, References [CR.CRMTRAIN.CONTROLLERTRAIN.P](#) , 195.446(h)

Question Text *Has a controller training program been established to provide training for each controller to carry out their roles and responsibilities?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Pipeline training is part of the training for the A-Reformer position at the refinery.**

Question ID, References [CR.CRMTRAIN.CONTROLLERTRAIN.R](#) , 195.446(h)

Question Text *Has a controller training program been implemented to provide training for each controller to carry out their roles and responsibilities?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Training for A-Operator Reformer is job specific and is covered in OPS-03 module.

Question ID, References [CR.CRMTRAIN.TRAININGREVIEW.P](#) , 195.446(h)

Question Text *Have processes been established to review the controller training program content to identify potential improvements at least once each calendar year, but at intervals not to exceed 15 months?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Preventative Maintenance system(MAXIMO) generates a WO to review the training manual during Sept of each year.

Question ID, References [CR.CRMTRAIN.TRAININGREVIEW.R](#) , 195.446(h)

Question Text *Have processes been implemented to review the controller training program content to identify potential improvements at least once each calendar year, but at intervals not to exceed 15 months?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Reviewed WO's generated to review the training manual for the previous 10 years.

Question ID, References [CR.CRMTRAIN.TRAININGCONTENT.R](#) , 195.446(h)

Question Text *Does training content address all required material, including training each controller to carry out the roles and responsibilities that were defined by the operator?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes Reviewed basic training modules and specific operator training units. The McChord Pipeline Operations(OPS) manual is included in training material for operators.

Question ID, References [CR.CRMTRAIN.AOCLIST.R](#) , 195.446(h)(1)

Question Text *Has a list of the abnormal operating conditions that are likely to occur simultaneously or in sequence been established?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Operations Manual Section IV. Abnormal Operations.

Question ID, References [CR.CRMTRAIN.TRAININGABNORMAL.P](#) , 195.446(h)(1)

Question Text *Does the training program provide controller training on recognizing and responding to abnormal operating conditions that are likely to occur simultaneously or in sequence?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes McChord Operations Manual Section IV. Abnormal Operations.

Question ID, References [CR.CRMTRAIN.TRAINING.R](#) , 195.446(h)(2)

Question Text *Does the training program use a simulator or tabletop exercises to train controllers how to recognize and respond to abnormal operating conditions?*

Result **Sat**

Assets Covered Unit McChord CRM

Result Notes **McChord Operators are trained with "what if", and tabletop exercises.**

Question ID, References [CR.CRMTRAIN.TRAINING.O](#) , 195.446(h)(2)

Question Text *Does the training program use a simulator or tabletop exercises to train controllers how to recognize and respond to abnormal operating conditions?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord uses a combination of written materiel and tabletop exercises for Abnormal Operations training. Training for operators also includes hands on operation with qualified operator oversight.**

Question ID, References [CR.CRMTRAIN.COMMUNICATIONTRAINING.P](#) , 195.446(h)(3)

Question Text *Does the CRM program train controllers on their responsibilities for communication under the operator's emergency response procedures?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord OPEARation Manual Section 4, Subsection 4B**

Question ID, References [CR.CRMTRAIN.SYSKNOWLEDGE.P](#) , 195.446(h)(4)

Question Text *Does the training program provide controllers a working knowledge of the pipeline system, especially during the development of abnormal operating conditions?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Training program appears to provide controllers with a working knowledge of the pipeline system.**

Question ID, References [CR.CRMTRAIN.INFREQOOPSLIST.R](#) , 195.446(h)(5)

Question Text *Has a list of pipeline operating setups that are periodically (but infrequently) used been established?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **McChord Pipeline Operation Manual Section III lists the infrequently used operating setups.**

Question ID, References [CR.CRMTRAIN.INFREQOPSREVIEW.P](#) , 195.446(h)(5)

Question Text *Do processes specify that, for pipeline operating set-ups that are periodically (but infrequently) used, the controllers must be provided an opportunity to review relevant procedures in advance of their use?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Before any infrequent operating setups the procedure is reviewed by the controllers.**

CR.CRMCOMP: Compliance Validation and Deviations

Question ID, References [CR.CRMCOMP.SUBMITPROCEDURES.P](#) , 195.446(i)

Question Text *Are there adequate processes to assure that the operator is responsive to requests from applicable agencies to submit their CRM procedures?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Preventative Maintenance Work Order is generated to review and submit the latest manuals to WUTC and the PHMSA.**

Question ID, [CR.CRMCOMP.SUBMITPROCEDURES.R](#) , 195.446(i)

References

Question Text *Has the operator been responsive to requests from applicable agencies to submit their CRM procedures?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Manuals are submitted in a timely manner.**

Question ID, References [CR.CRMCOMP.CRMCOORDINATOR.R](#) , 195.446(i)

Question Text *Is there an individual that is responsible and accountable for compliance with requests from PHMSA or other applicable agencies?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Yes, Nick Peelo, Chief Engineer, (253)383-1651**

Question ID, References [CR.CRMCOMP.RECORDS.P](#) , 195.446(j)(1)

Question Text *Records management processes adequate to assure records are sufficient to demonstrate compliance with the CRM rule?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Records management appear to be adequate to insure compliance.**

Question ID, References [CR.CRMCOMP.RECORDS.R](#) , 195.446(j)(1)

Question Text *Are records sufficient to demonstrate compliance with the CRM rule?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Records appear to be sufficient to demonstrate compliance.**

Question ID, References [CR.CRMCOMP.ELECTRONICRECORDS.R](#) , 195.446(j)(1)

Question Text *Are electronic records properly stored, safeguarded, and readily retrievable?*

Result **Sat**

Assets Covered **Unit McChord CRM**

Result Notes **Electronic records are properly stored and have been readily retrievable during this audit.**

Question ID, References [CR.CRMCOMP.DEVIATIONS.P](#) , 195.446(j)(2)

Question Text *Are there processes to demonstrate and provide a documented record that every deviation from any CRM rule requirement was necessary for safe operation?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **No deviations noted.**

Question ID, References [CR.CRMCOMP.DEVIATIONS.R](#) , 195.446(j)(2)

Question Text *Were all deviations documented in a way that demonstrates they were necessary for safe operation?*

Result **NA**

Assets Covered **Unit McChord CRM**

Result Notes **No deviations noted.**

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