



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

June 18, 2018

EA-14-008
EA-14-088
EA-16-124

Mr. Richard L. Anderson, Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802-0967

**SUBJECT: ARKANSAS NUCLEAR ONE – NRC CONFIRMATORY ACTION LETTER
(EA-16-124) FOLLOW-UP INSPECTION REPORT 05000313/2018013 AND
05000368/2018013 AND ASSESSMENT FOLLOW-UP LETTER**

Dear Mr. Anderson:

On May 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Arkansas Nuclear One (ANO) facility, Units 1 and 2. The team discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

During this inspection, the inspection team reviewed the last of the specific actions from the ANO Comprehensive Recovery Plan to which you committed via a Confirmatory Action Letter (CAL) dated June 17, 2016, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16169A193) (EA-16-124). This letter presents the results of that inspection, closes the CAL, and updates the NRC's assessment of performance at ANO, Units 1 and 2.

The NRC team did not identify any findings or violations of more than minor significance.

On March 2, 2015, ANO, Units 1 and 2, were placed into the Multiple/Repetitive Degraded Cornerstone Column (Column 4) of the NRC's Reactor Oversight Process (ROP) Action Matrix. This action was based on having one Yellow finding in the Initiating Events Cornerstone and one Yellow finding in the Mitigating Systems Cornerstone in each unit.

Between August 2016 and May 2018, the NRC conducted eight CAL follow-up inspections to review Entergy's progress in completing 161 CAL actions to address performance issues at ANO. You reported completing the CAL inspection focus areas in letters dated February 6, 2018, (ADAMS Accession No. ML18040A918) and March 19, 2018, (ADAMS Accession No. ML18078B153). The NRC closed the Significant Performance Deficiencies and the Identification, Assessment, and Correction of Performance Deficiencies areas in Inspection Report 05000313/2018012 and 05000368/2018012 (ADAMS Accession No. ML18092A005). During this inspection, the NRC completed the final closeout review of your CAL actions.

Specifically, this report closes the CAL areas for Human Performance, Equipment Reliability and Engineering Programs, Safety Culture, and Service Water System Self-Assessment. The NRC has determined that all of Entergy's committed actions to improve the safety performance at ANO have been completed and should sustain performance improvement. Therefore, the ANO CAL is closed.

As a result of closing the Yellow findings and the CAL, the NRC has updated its assessment of ANO, Units 1 and 2. Based on a review of current performance indicators and inspection results, the NRC determined the performance at ANO, Units 1 and 2 to be in the Licensee Response Column (Column 1) of the Reactor Oversight Process Action Matrix as of the date of this letter.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Kriss M. Kennedy
Regional Administrator

Docket Nos. 50-313; 50-368
License Nos. DPR-51; NPF-6

Enclosure:

Inspection Report 05000313/2018013 and
05000368/2018013

w/ Attachments:

1. List of Confirmatory Action Letter Items Closed and Discussed
2. List of Documents Reviewed
3. Confirmatory Action Letter Item Status

**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number(s): 05000313, 05000368

License Number(s): DPR-51, NPF-6

Report Number(s): 05000313/2018013, 05000368/2018013

Enterprise Identifier: I-2018-013-0003

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

Location: Russellville, Arkansas

Inspection Dates: April 2, 2018 to May 31, 2018

Inspectors: J. Dixon, Senior Project Engineer, (Team Leader)
E. Duncan, Region III, Branch Chief
M. Keefe-Forsyth, Office of Nuclear Reactor Regulation, Safety Culture
Specialist
M. Tobin, Resident Inspector
D. Willis, Office of Enforcement, Allegation Team Leader

Approved By: N. O'Keefe
Branch Chief
Division of Reactor Projects

SUMMARY

IR 05000313/2018013; 05000368/2018013; 4/2/2018 – 5/31/2018; Arkansas Nuclear One, Units 1 and 2; Confirmatory Action Letter (CAL) Follow-up Inspection (IP 92702).

The inspection activities described in this report were performed between April 2 and May 31, 2018, by a team from the NRC's Region III and IV offices, the Office of Nuclear Reactor Regulation, the Office of Enforcement, and a resident inspector at Arkansas Nuclear One. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

On June 17, 2016, the NRC issued a Confirmatory Action Letter (CAL) (ADAMS Accession No. ML16169A193) (EA-16-124) confirming actions that Entergy committed to take in the Arkansas Nuclear One (ANO) Comprehensive Recovery Plan (CRP).

On March 19, 2018, the licensee notified the NRC that actions to improve performance in the four remaining inspection focus areas from the CAL were complete and effective, and requested an inspection of these areas for possible closure (ADAMS Accession No. ML18078B153). During this inspection, the team reviewed and closed the last four specific actions from the CAL, and also reviewed the Human Performance, Equipment Reliability and Engineering Programs, Safety Culture, and Service Water System inspection focus areas. The team concluded that, individually and collectively, the licensee's actions were effective in achieving the CRP objectives. Therefore, all actions and inspection focus areas from the ANO CAL are closed.

Below is a summary of the NRC's basis for closing each of the inspection focus areas in the CAL.

Improvements to Address Significant Performance Deficiencies

To address the root and contributing causes for the Yellow findings for the stator drop and the flooding events, including plant deficiencies and problems with vendor oversight, change management, conservative decision-making, and risk management, Entergy implemented 39 actions in addition to those already completed at the time the CAL was issued. With respect to the Yellow inspection finding associated with the drop of the Unit 1 main generator stator on March 31, 2013, the NRC concluded that the corrective actions improved the licensee's implementation of the oversight of contractors and vendors. Decision-making, risk recognition, and the ability to manage risk were also improved, as well as increasing the technical rigor used to assess vendor work products. Many of these corrective actions were demonstrated to be effective during the replacement of both shutdown cooling heat exchangers in Unit 2 in 2017. This project involved many of the complex challenges that were present during the stator replacement project, including special lifts, and our inspections noted significantly improved planning, oversight, technical rigor, testing, and risk management actions.

Actions taken to address the Yellow flood protection inspection finding to reconstitute and document the design basis for plant features intended to protect vital plant equipment from the damage caused by flooding, tornado missiles, and other external events were effective in identifying and correcting deficiencies and establishing appropriate configuration control mechanisms. Preventive maintenance and testing strategies were also improved to verify effective flood sealing.

On March 29, 2018, the NRC determined that all Significant Performance Deficiency actions were complete and effective, and concluded that ANO's actions met the objectives of Inspection Procedure 95002 and the associated objectives stated in the ANO CRP. Therefore, the Yellow finding involving the failure to approve the design and to load test a temporary lift assembly (EA-14-008), the Yellow finding involving the failure to maintain required flood mitigation design features (EA-14-088), and the Significant Performance Deficiency inspection focus area of the CAL were closed in NRC Inspection Report 05000313/2018012 and 05000368/2018012.

Improvements to Corrective Action Program

To address improvement in the implementation and oversight of the corrective action program, self-assessment, performance monitoring, quality of problem evaluations, and use of operating experience, Entergy implemented 34 actions. The NRC determined that actions to improve training, defining roles and responsibilities, and management oversight of corrective action program functions resulted in improved identification, evaluation, and corrective actions for performance deficiencies. Problems are evaluated and assumptions are validated prior to making decisions. ANO reduced its reliance on compensatory measures and engineering evaluations for degraded conditions by correcting problems and restoring plant safety margins. Corrective actions are timely and backlogs have been reduced. Improved self-assessment and performance monitoring practices have identified and addressed declining performance trends. Operating experience issues are being identified and addressed at a low threshold.

On March 29, 2018, the NRC determined that all corrective action program actions were complete and effective in achieving the stated objectives. Therefore, the Identification, Assessment, and Correction of Performance Deficiencies inspection focus area of the CAL was closed in NRC Inspection Report 05000313/2018012 and 05000368/2018012 (ADAMS Accession No. ML18092A005).

Improvements in Human Performance

To improve human performance, leadership behaviors, organizational capacity, procedure quality, standards, and accountability, Entergy implemented 40 actions. The ability to complete work across all site departments improved, in part, through hiring and training efforts. ANO implemented a new process to anticipate and address organizational capacity challenges in staffing, training, and expertise that closed existing gaps. Additionally, ANO implemented actions to reduce reliance on vendors and the training department increased its capacity and facilities in order to support departmental training needs.

The NRC noted that there were changes in the station leadership team composition and capabilities. Leadership assessments, individual development plans, and training and coaching enhanced leader behaviors in the areas that caused the safety culture at ANO to degrade. Station leaders improved their ability to observe and assess performance and address shortfalls. Decision-making has been proactive, strategic, conservative, and includes seeking input from workers. Increased field presence for leaders improved their understanding of work conditions. This has facilitated recognizing and addressing problems with work processes, work instruction quality, teamwork, standards, and accountability. Procedure writers and work planners were trained to implement industry procedure quality standards, and station procedures and work instructions are being upgraded to improve technical content, clarity, and human factoring that are appropriate for the existing experience levels of the users.

The human error rate was reduced by reinforcing procedure use and adherence standards and improving procedure quality. Operator performance was improved and challenges during events were reduced by removing distractions and fixing degraded equipment, as well as by raising teamwork, standards, and accountability through high-impact training and increased oversight.

The NRC determined that all Human Performance improvement actions were complete and effective in achieving the associated objectives stated in the ANO CRP. Therefore, the Human Performance inspection focus area of the CAL is closed.

Improvements to Equipment Reliability and Engineering Programs

To improve implementation of processes and programs that ensure key plant equipment remains available, reliable, and capable of meeting the plant design and licensing bases, including resolving specific equipment conditions, Entergy implemented 25 actions. ANO improved the organizational capacity in engineering through targeted hiring, training, and development plans for engineers. This included staffing all engineering programs with trained and qualified program owners and backups. The quality of engineering programs and plant systems are being effectively monitored through the Program Health and Plant Health processes. Industry best practices for system health were implemented, including using a multidiscipline Plant Health Committee to review performance trends and develop improvement plans, including those that address equipment aging and obsolescence issues, as well as procurement of strategic spare components.

The NRC reviewed the results of numerous equipment reliability improvement projects and noted that each project was effective in improving the reliability of key plant equipment or restoring lost safety margins. ANO reevaluated the equipment classification of the components and systems most important to safety and stable plant operation, increasing many of the importance rankings using the latest industry standards. ANO implemented a process for reviewing preventive maintenance strategies and vendor recommendations during the work planning process, using plant operating and maintenance experience to make timely adjustments to the scope and frequency of the work. A new Component Maintenance Optimization group was also created to place maintenance support engineers and predictive maintenance personnel within the Maintenance department to provide technical expertise to support work in progress and preventive maintenance planning.

The NRC determined that all Equipment Reliability and Engineering Program improvement actions were complete and effective in achieving the associated objectives stated in the ANO CRP. Therefore, the Equipment Reliability and Engineering Program inspection focus area of the CAL is closed.

Improvements in Safety Culture

To improve nuclear safety culture values and behaviors to ensure commitment by leaders and individuals to emphasize safety over competing goals, Entergy implemented 22 actions. Entergy increased the staffing and funding resources available to ANO to support the workload and improve the safety culture at the station. Efforts to build trust and demonstrate conservative decision-making, improve equipment reliability, reduce work backlogs, and raise standards demonstrated leadership's commitment to improving safety and performance at ANO. Union leadership and individual contributors have become engaged, taking ownership of organizational challenges through committees and working groups to identify and address

process and teamwork issues. Workers have been trained on plant risk and how their job tasks relate to plant safety; allowing workers across the station to identify and report challenges that could affect safety. Training on the corrective action program, including roles and responsibilities, have improved worker understanding of the processes available to correct problems, leading to better problem reporting and suggestions to improve processes.

Safety culture surveys conducted throughout the time that ANO was in Column 4 have demonstrated an improving trend. The NRC performed safety culture focus group discussions in August 2017, and during this current inspection, and noted more positive responses. Performance indicators also demonstrated improved outcomes in areas supported by positive safety culture behaviors.

The NRC determined that all Safety Culture improvement actions were complete and effective in achieving the associated objectives stated in the ANO CRP. Therefore, the Safety Culture inspection focus area of the CAL is closed.

Actions to Assess the Service Water System

To ensure conditions adverse to quality are identified and resolved, Entergy committed to conduct a focused self-assessment of the Units 1 and 2 service water systems in accordance with station procedures and NRC Inspection Procedure 93810, "Service Water System Operational Performance Inspection." The NRC concluded that ANO performed a thorough assessment of the condition of the service water system on both units. The resulting project plan to fund improvements to the technology used to monitor corrosion and pitting in system components, improve water chemistry control to minimize corrosion, and the replacement of piping and large components has restored system operating margins and addressed aging issues.

The NRC determined that the service water system self-assessment and the resulting project plan to address system problems were complete and effective in achieving the associated objectives stated in the ANO CRP. Therefore, the Service Water System Self-Assessment inspection focus area of the CAL is closed.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

40A5 Other Activities

.1 Confirmatory Action Letter (CAL) Inspection Focus Area Closures (IP 92702)

Background

On March 4, 2015, ANO Units 1 and 2 transitioned to the Multiple/Repetitive Degraded Cornerstone Column (Column 4) of the NRC's Reactor Oversight Process Action Matrix as a result of having two Yellow findings for each unit. In response, the NRC performed IP 95003, concluding the onsite portion of the inspection on February 26, 2016, and provided insights on ANO's performance weaknesses, their causes, and related safety culture issues. The 95003 team reviewed proposed corrective actions and identified the need for additional corrective actions to create prompt and sustained improvement. In a letter dated May 17, 2016, "ANO Comprehensive Recovery Plan" (ADAMS Accession No. ML16139A059), Entergy notified the NRC staff of its plan to perform specific actions to resolve the causes for declining performance at ANO, and provided a summary of that plan.

The NRC reviewed Entergy's CRP and concluded that Entergy's planned corrective actions should correct significant performance deficiencies and result in sustained performance improvement at ANO. The CRP is comprised of 14 Area Action Plans that contain key improvement actions and scheduled completion dates. The NRC grouped the CRP actions into six inspection focus areas to support future inspection activities based on ANO performance concerns documented in NRC Inspection Report 05000313/2016007 and 05000368/2016007 (ADAMS Accession No. ML16161B279). The NRC issued the CAL on June 17, 2016 (ADAMS Accession No. ML16169A193) to confirm commitments made by Entergy concerning ANO, Units 1 and 2, in each of the six inspection focus areas.

a. Closure of CAL Inspection Focus Area: Human Performance

Background

In performing their root cause evaluations for the stator drop and flood protection issues, ANO identified multiple areas where human performance did not meet industry standards, such as procedural use and adherence, caused by poor leadership behaviors. In response, ANO implemented prompt actions to improve operator performance, but Entergy's CRP included limited actions to address improving worker behaviors or increasing field presence of managers to set and enforce expectations.

The Third Party Nuclear Safety Culture Assessment in 2015 identified that ANO personnel tolerated, and at times normalized, degraded conditions. In addition to using analyses to accept degraded conditions and reduced safety margins, ANO management adopted long-term or permanent compensatory measures. These compensatory actions distracted operators from their normal duties and challenged response actions during events. The true number of degraded conditions and compensatory measures was not apparent because they were dispersed in a variety of tracking processes or the actions were made permanent through analyses, or proceduralized actions.

The 95003 inspection team concluded from observations in the control room, plant, and simulator that operator performance improvement actions were effective, and that actions to improve the quality and effectiveness of supervisory field observations appeared to be successful at the first- and second-line supervisor level. However, both ANO and the NRC identified concerns with procedure adherence as ANO had not evaluated the causes for problems in this area beyond determining that the quality of site-specific procedures and work instructions were below current industry standards and were not adequately human factored. The NRC team identified that workers attempted to informally resolve unclear guidance in procedures rather than stopping and notifying supervisors.

Scope of Review

Since August 29, 2016, the NRC has performed quarterly CAL inspections of individual action items and found the items to be complete and effective. The complete list of individual action items along with descriptions and relevant inspection reports is provided in Attachment 3. To ensure the licensee adequately addressed the inspection focus area, the NRC team reviewed the key desired behaviors and outcomes (DB&Os) to verify that the licensee achieved sustained improvement. Specifically, the following DB&Os were reviewed:

- Corrective Action Program (CA) DB&O-2: Workers identify conditions adverse to quality promptly and in accordance with station procedure and expectations. Workers apply a low threshold for reporting problems. (Key Actions CA-1, CA-4)
- Decision Making and Risk Management (DM) DB&O-2: Senior leaders demonstrate accountability and a bias for action to correct deficiencies and challenges to safe and reliable operation for the long term. Responsible managers present accurate information and thorough solutions that minimize threats to plant performance and safety. (Key Action DM-2)
- Leadership Fundamentals (LF) DB&O-1: Leaders communicate and build trust in the organization. (Key Actions LF-1, LF-3, LF-4, LF-5, LF-6, LF-7, and LF-9)
- LF DB&O-4: ANO leaders are identifying and addressing individual and organizational performance issues. (Key Actions LF-1, LF-3, LF-5, LF-9, and LF-13)
- Nuclear Fundamentals (NF) DB&O-5: Workers apply a questioning attitude and stop when unsure. Individuals challenge assumptions and offer opposing views when they think something is not correct. Concerns are fully satisfied before work continues. (Key Actions NF-1, NF-6, NF-7, and NF-9)
- NF DB&O-7: Workers and leaders are observant of conditions in the plant and ensure that issues, problems, degraded conditions, and near misses are promptly reported and documented in the corrective action program at a low threshold. (Key Actions NF-1, NF-6, NF-7, and NF-9)

- NF DB&O-8: Workers understand what it means to be “thinking and engaged” and practice the foundational behaviors (criteria) defined by the industry for the Nuclear Professional. (Key Actions NF-1, NF-2, NF-6, NF-7, NF-8, and NF-9)
- NF DB&O-10: Application of fundamental behaviors is reflected in low rates of human performance errors and rework. (Key Actions NF-1, NF-3, NF-5, NF-7, NF-8, NF-9, and NF-10)
- Organizational Capacity (OC) DB&O-1: Leaders ensure nuclear safety is the top consideration in making decisions on workforce resources. Leaders use appropriate information to make strategic decisions regarding workforce needs. The information includes data supporting organization capability, e.g., knowledge gaps, attrition projections and demographic makeup (age and years of service - proficiency). This information is incorporated into an Integrated Strategic Workforce Plan (ISWP) that leaders use to ensure the organization has the necessary capacity and skills for safe and reliable plant operation. (Key Actions OC-1, OC-2, OC-3, and OC-4)
- Plant Health (PH) DB&O-2: Plant Health Working Group and Plant Health Committee members make conservative decisions on plant health issues with a primary emphasis on nuclear safety risk. The Plant Health Process supports nuclear safety by minimizing long-standing equipment issues. Equipment problems and vulnerabilities are addressed using well thought out, permanent solutions. (Key Actions PH-1, PH-5, PH-6, PH-9, PH-11, PH-12, PH-13, and PH-14)
- Procedure and Work Instruction Quality (PQ) DB&O-1: Station procedures and work instructions are technically accurate, complete, and contain consistent human factoring and clarity to support predictable, repeatable, and successful work performance. (Key Actions PQ-1, PQ-2, PQ-3, PQ-5, PQ-6, PQ-7, PQ-8, PQ-9, and PQ-10)
- PQ DB&O-4: Procedure Improvement and Work Order Feedback backlogs are minimized to ensure quality, up-to-date work documents are available. (Key Action PQ-11, supporting actions include PM-07 and PM-09: monitored by metrics)
- Safety Culture (SC) DB&O-2: Leaders model correct behaviors, especially when resolving apparent conflicts between nuclear safety and production. (Key Actions SC-1, SC-4, SC-8, SC-9, and SC-14)

To evaluate the licensee’s corrective action effectiveness, the team reviewed:

- Confirmatory Action Letter and Area Action Plan Actions Effectiveness (LO-ALO-2018-00014)
- Human Performance Closure Readiness Evaluation
- Leadership Fundamentals Area Action Plan Closure Report
- Nuclear Fundamentals Area Action Plan Closure Report

- Procedure and Work Instruction Quality Area Action Plan Closure Report
- Entergy fleet procedures to verify CAL commitments were translated from ANO recovery procedures
- Station and CRP metrics
- Interviewed a cross section of station managers, employees, and contractors

The team evaluated the corrective actions and effectiveness criteria established by the licensee in aggregate for the reviewed DB&Os. The team noted that the licensee took multiple actions to address human performance not meeting industry standards in areas such as: procedural use and adherence; improving worker behaviors; increasing field presence of supervisors and managers; setting and enforcing expectations; personnel tolerating, and at times normalizing, degraded conditions; and management adopting long-term or permanent compensatory measures.

As a result of the team's review of the corrective actions and discussions with station employees and contractors, the team concluded the licensee has steadily improved human performance at the station. The team determined that the licensee's actions to address procedural use and adherence, create a procedure writers guide, and improve the quality of procedures and work orders to the new standard has reduced the number of procedure errors. The team also determined that the licensee's paired observation and behavior based safety observation programs have been accepted by the work force as a positive tool to hold each other accountable, maintain a questioning attitude, and stop and seek clarification when they encounter unclear guidance. The team was able to confirm this improving trend by discussions with station employees and contractors, and reviewing specific metrics such as, Online Risk (Actual vs Planned), Consequential Error Rate, Open Preventive Maintenance Change Requests, Open Craft Feedback Requests, Rework, and Procedure and Work Instruction Backlog.

The team determined that the licensee's actions to address improving worker behavior by establishing a paired observation program, implementing a behavior based safety program, implementing weekly leadership alignment meetings for supervisors and above to reinforce the expected actions and behaviors, and implementing a "Connection to the Core" campaign, as examples, has resulted in a more engaged work force. The team also determined that the licensee's behavior based safety observation program and the "Connection to the Core" campaign have been accepted by the work force as a way for workers to hold each other and management accountable for maintaining a low reporting threshold and understanding how their specific work activity can affect plant safety. The team was able to confirm this improving trend by discussions with station employees and contractors, and reviewing specific metrics such as, Consequential Error Rate, Observation Program Health Index, Recordable Injury Rate, Nuclear Safety Culture Monitoring Index, Technical Conscience Index, and Rework.

The team determined that the licensee's actions to improve field presence of supervisors and managers and use this as a mechanism to set and enforce expectations has resulted in improved communications and trust between workers and the leadership team. The licensee established a field presence initiative that promotes and measures leader field presence, 1X1 meetings (pronounced as "one by one meeting," where a manager coaches a supervisor) that promote alignment and reinforce leader behaviors,

and benchmarking an external organization to identify and adopt best practices in the Leadership Fundamentals area. The team determined that the licensee improved communications through implementation of a new Nuclear Excellence Model that reinforced trust and teamwork, adding new field presence performance indicators for supervisors and managers to monitor results, and establishing an Employee Communication Advisory Team. The Employee Communication Advisory Team consists of management and individual contributors from cross-functional groups that make recommendations to improve the effectiveness of site/fleet communications. The team was able to confirm this improving trend through discussions with station employees and contractors, reviewing specific metrics such as, 1X1 Meeting Effectiveness, Observation Program Health Index, Field Presence, and validating that the weekly “protected time” meetings are being implemented to share the messages from the Leadership and Alignment meetings with their workers.

The team determined that the licensee’s actions to address tolerating/normalizing degraded conditions and adopting long-term or permanent compensatory measures have resulted in station employees having a lower threshold for reporting problems. The licensee achieved these results by providing training on the Corrective Action Program, implementing a Comprehensive Site Plan for Equipment Reliability, resolving long-standing equipment issues, assigning mentors from outside of the Entergy Fleet to each shift manager, and improving the Site Integrated Planning Database process for equipment related entries. The team determined that the licensee’s actions resulted in workers focusing on procedure use and adherence, challenging assumptions and decision making, and improving risk recognition. The team was able to confirm these outcomes through discussions with station employees and contractors, and by reviewing specific metrics such as, Equipment Reliability Index, Deficiency Induced Fire Impairments, Age of Red and Yellow Systems, Operator Aggregate Index Non-Outage, Engineering Program Health, Critical Equipment Failures, Rework – Nuclear Fundamentals, Condition Report Backlog, Maintenance Backlog, and CAP Line Ownership and Engagement Index.

The team also determined that the licensee’s actions to increase the number of employees, improve mentoring and training availability, improve industry participation, and availability of training from vendors have had a positive impact on communications, trust, and culture among large sections of the work force. The team also determined that the licensee’s actions to address risk have been effective by observing risk recognition, prioritization, mitigation, and discussion at all levels of the organization during observations of work.

The team concluded that there has been a steady improvement in human performance at the station. Examples include a declining number of consequential errors, a lower threshold for reporting problems, an increase in the number of equipment-related Site Integrated Planning Database entries (reflecting a higher confidence in the effectiveness of the process), and a more inclusive work force. Based on the actions taken by the licensee, data evaluated by the team, and observations performed on site, the team concluded that the actions taken to address Human Performance inspection focus area were effective. Therefore, the Human Performance inspection focus area of the CAL is closed.

b. Closure of CAL Inspection Focus Area: Equipment Reliability and Engineering Programs

Background

In 2007, Entergy implemented an alignment initiative across their fleet, which resulted in reduced staffing levels at ANO. The reduced resources available to do work at ANO created a number of challenges that slowly began to impact equipment reliability by reducing the amount of preventive maintenance performed and extending the time between maintenance activities. The loss of experienced staff made on-time completion of maintenance activities difficult, and the lack of effective action to maintain equipment reliability in an aging plant caused an increase in emergent work that disrupted scheduled maintenance. A cumbersome and poorly understood process for approving and funding equipment upgrades resulted in only the highest priority work being approved, and rescheduling or cancellation of lower priority work. ANO did not identify problems in the Site Integrated Planning Database process for approving and funding major projects. The 95003 inspection team noted that the CRP was updated to address this gap.

Scope of Review

Since August 29, 2016, the NRC has performed quarterly CAL inspections of individual action items and found the items to be complete and effective. The complete list of individual action items along with descriptions and relevant inspection reports is provided in Attachment 3. To ensure the licensee adequately addressed the inspection focus area, the NRC team reviewed the key DB&Os to verify that the licensee achieved and sustained improvement. Specifically, the following DB&Os were reviewed:

- Design and Licensing Basis (DB) DB&O-2: Engineering staffing levels are adequate to sustain improved plant operations, maintain high levels of equipment performance, and support excellence in Engineering Program implementation. Changes to staffing levels, workload, skills, proficiency, or knowledge level will be addressed with nuclear safety as the overriding priority. Engineering backlogs are maintained such that latent risks are minimized. (Key Actions DB-4, DB-5, and DB-6)
- DM DB&O-2: Senior leaders demonstrate accountability and a bias for action to correct deficiencies and challenges to safe and reliable operation for the long term. Responsible managers present accurate information and thorough solutions that minimize threats to plant performance and safety. (Key Action DM-2)
- PH DB&O-2: Plant Health Working Group and Plant Health Committee members make conservative decisions on plant health issues with a primary emphasis on nuclear safety risk. The Plant Health Process supports nuclear safety by minimizing long-standing equipment issues. Equipment problems and vulnerabilities are addressed using well thought out, permanent solutions. (Key Actions PH-5, PH-6, PH-9, PH-11, PH-12, PH-13, and PH-14)
- Preventive Maintenance (PM) DB&O-6: The standards for PM Work Order quality result in high quality PM Work Orders. PM Work Order Feedback from

Craft personnel is incorporated in a timely manner. (Key Actions PM-7, PM-9, PM-19, and supporting action PQ-9)

- PM DB&O-7: Weaknesses in PM strategies are consistently identified and resolved prior to PM implementation. (Key Actions PM-13, PM-19, and supporting actions PM-4 and PM-15)
- PM DB&O-8: Operating experience, vendor recommendations, internal technical expertise, and craftsmanship are applied through the PM program to minimize consequential equipment failures. (Key Actions PM-2, PM-4, PM-6, PM-13, and supporting action PQ-09)

To evaluate the licensee's corrective action effectiveness, the team reviewed:

- Confirmatory Action Letter and Area Action Plan Actions Effectiveness (LO-ALO-2018-00014)
- Decision Making and Risk Management Area Action Plan Closure Report
- Design and Licensing Basis Area Action Plan Closure Report
- Equipment Reliability and Engineering Programs Closure Readiness Evaluation
- Plant Health Area Action Plan Closure Report
- Preventive Maintenance Program Area Action Plan Closure Report
- Station and CRP metrics, as well as other relevant performance monitoring data
- Interviewed a cross section of station managers, employees, and contractors

The team evaluated the corrective actions and effectiveness criteria established by the licensee in aggregate for the reviewed DB&Os. The team noted that the licensee took multiple actions to address equipment reliability and engineering programs. The team reviewed corrective actions to address longstanding equipment performance trends, classification, and inclusion of plant components in key programs, loss of engineering experience, understaffing for engineering programs, and training and qualification for engineers to ensure deficiencies identified during the IP 95003 inspection were appropriately addressed.

The team performed a detailed review of the following key actions:

- Key Action DB-4: Determine the appropriate level of staffing for safe and reliable operation of ANO given experience, training needs, knowledge management needs, projected attrition, and the workload of the current level of staffing. (CR-ANO-C-2015-02833, CA-47)
- Key Action DB-5: Implement a staffing plan developed in response to staffing issues. Include baseline organizational changes and staffing for Recovery efforts. (CR-ANO-C-2015-02831, CA-41)

- Key Action DB-6: Implement a workforce planning process to include a long-term ANO Integrated Strategic Workforce Plan (ISWP) that will provide the necessary level of detail to ensure a sustained staffing plan that accounts for talent needs, knowledge management, and training. (CR-ANO-C-2015-02833, CA-48)

The team reviewed People Health Committee meeting minutes that documented actual and projected hiring and attrition data, in both a monthly and cumulative manner, with a particular focus on the People Health Committee meeting results for February 15, 2018, that focused on engineering department staffing. The team also reviewed current organization charts to determine whether any staffing vacancies existed and, if so, whether plans were in place to fill those vacancies.

The team also reviewed performance indicators and metric data associated with engineering. In particular, engineering backlogs such as design and system engineering and programs condition report backlogs, configuration management workload backlogs, engineering change backlogs, paid and nonpaid overtime, and staffing were reviewed. The results of these reviews reflected an increase in staffing levels that supported the current workload without the need for frequent overtime. For the areas reviewed, where engineering-related performance did not meet station goals, such as Engineering Change Delivery, the team verified that the licensee was implementing an action plan to improve performance.

The team identified one area that was assessed as an opportunity for further enhancement associated with Key Action DM-2: "Establish a decision making Nuclear Safety Culture Observation form to include the top Leader Behaviors to be demonstrated and reinforced at ANO meetings. The form should include decision-making practices that emphasize prudent choices over those that are simply allowable." The team reviewed approximately 100 recent Nuclear Safety Culture Observation forms to assess whether top behaviors by leaders, including those related to decision-making, were being demonstrated. The team identified that the forms have wide variability in the level of detail provided, which limited the overall usefulness of the data. However, the team determined through interviews that the Nuclear Safety Culture Observer function was being implemented as an effective improvement tool. The licensee entered the need to provide instruction on transferring data from the observation form into the observation database into their corrective action program as Condition Report CR-ANO-C-2018-01500.

A bias for action in addressing equipment reliability issues was evidenced in the performance indicators and metric data that was reviewed by the team. In particular, performance improvement metrics in areas affected by decision-making with a bias to action, such as equipment reliability, the length of time that systems are not performing at optimum levels, and critical equipment failures demonstrated improvement and met or exceeded licensee goals in most cases. In cases where the performance had not yet achieved the goal, the performance trend was observed by the team to be in a positive direction as a result of the licensee implementing an action plan.

The team also reviewed performance indicators and metric data associated with Plant Health. In particular, the team reviewed critical equipment failures, equipment reliability index, and the length of time that systems were not performing at optimum levels. The team also reviewed the most recent System Health IQ report, which assessed the overall health of all of the safety-related and nonsafety-related systems that supported plant operation. The team determined that the health of the systems had improved, system health fully supported safe plant operation, and that performance was sustainable based on the consistency in performance over time.

The team also reviewed performance indicators and metric data associated with preventive maintenance. In particular, the team reviewed procedure and work instruction backlogs, procedure and work instruction workoff curves, maintenance backlogs, open craft feedback requests, and open preventive maintenance change requests. The team determined that the preventive maintenance indicators continued to improve to performance levels that exceeded licensee performance goals.

The results of the team's interviews reflected very positive worker opinions regarding the changes implemented at ANO. In particular, the interviews identified that a bias for action to address problems had developed in the organization at both the site and corporate level. Decisions to perform new work identified during refueling outages that caused those outages to be extended beyond their original completion dates were frequently identified as evidence of this new bias for action and to make decisions focused on long-term plant reliability.

The interviews also consistently reflected an increase in the staffing levels in the engineering department with an associated decrease in workload, despite the additional engineering work required to support plant recovery activities. The hiring of both experienced personnel and recent college graduates was viewed positively by the organization, and the hiring of a dedicated recruiter to help identify prospective candidates to fill vacancies at the site improved the process.

The team noted that the process for incorporating feedback into work orders lacked a clear mechanism for making prompt changes. In particular, there was no formal process to make high priority work order changes. This type of process exists for changes to procedures. Procedure EN-WM-105, "Planning," step 5.9, "Planning Feedback," Substep [3] only required that preventive maintenance work order feedback be monitored and incorporated within 90 days or that the feedback be evaluated and the preventive maintenance model work order be placed in a plan status within 90 days with a hold pending incorporation of the feedback. The licensee entered the lack of procedural clarity to incorporating feedback to work orders prior to field implementation into their corrective action program as Condition Report CR-ANO-C-2018-01552.

Based on the actions taken by the licensee, data evaluated by the team, and observations performed on site, the team concluded that the actions taken to address the Equipment Reliability and Engineering Programs inspection focus area were effective in meeting the DB&Os. Therefore, the Equipment Reliability and Engineering Programs inspection focus area of the CAL is closed.

c. Closure of CAL Inspection Focus Area: Safety Culture

Background

ANO determined that the most significant causes for declining performance were ineffective change management with respect to resource reductions, and leadership behaviors that were not commensurate with a strong safety culture. When implementing resource reductions across its fleet in 2007 and 2013, Entergy did not consider the unique staffing needs for ANO created by having two units with different technologies. ANO management did not reduce workloads through efficiencies or the elimination of unnecessary work, as was intended as part of the resource reduction initiatives. Leaders attempted to prioritize work with the available resources, but were unable to address expanding work backlogs. An unexpected increase in attrition between 2012 and 2014 caused a loss in experienced personnel, a reduced capacity to accomplish work, and an increase in the need for training and supervision. While the 95003 inspection team determined that workers were willing to raise safety concerns, the workers were not confident that management would address more routine problems. ANO leaders missed an opportunity to engage the workforce early in the recovery process to help identify, assess, and develop corrective actions for declining performance. As a result, the NRC team's independent safety culture evaluation noted limited improvement in safety culture since the completion of ANO's independent Third Party Nuclear Safety Culture Assessment in 2015.

ANO had not initially assessed the training function, even though safety culture assessments identified training as a problem area. Workers reported that training did not have sufficient priority, impacting their ability to perform their current roles and the ability to achieve higher level qualifications. In response, ANO conducted an evaluation and identified that training needed to be used as a tool to correct problems and improve performance and created a Training to Improve Organizational Performance Area Action Plan.

ANO had not created a specific improvement plan to address the findings of the safety culture assessments, choosing to address selected safety culture attributes that were associated with root cause evaluations rather than treating the findings in the context of a separate problem area. By not performing a cause evaluation for safety culture, ANO management missed the opportunity to address the full scope of safety culture weaknesses. To address this issue, ANO performed two cause evaluations, developed the Safety Culture Area Action Plan, and assigned a full-time Safety Culture Manager.

Scope of Review

Since August 29, 2016, the NRC has performed quarterly CAL inspections of individual action items and found the items to be complete and effective. The complete list of individual action items along with descriptions and relevant inspection reports is provided in Attachment 3. To ensure the licensee adequately addressed the inspection focus area, the NRC team reviewed the focus area for key DB&Os to verify that the licensee showed sustained improvement. Specifically, the following DB&Os were reviewed:

- Corporate and Independent Oversight (CO) DB&O-1: Specific information is provided on ANO Safety Culture and regulatory perspective to the Entergy Operations senior management review board (Oversight Analysis Meeting and

Oversight Review Board). This information is used for performance monitoring and comprehensive oversight decisions. (Key Actions CO-1, CO-2, and CO-4)

- CO DB&O-4: Controls are established for the Entergy change management processes including planning, execution, and effectiveness review. These controls are used to prevent unintended consequences during high-risk changes. (Key Action CO-5)
- CO DB&O-6: Specific information is provided on ANO Safety Culture and regulatory perspective to the Entergy Operations senior management review board (Oversight Analysis Meeting (OAM) and Oversight Review Board (ORB)). This information is used for performance monitoring and comprehensive oversight decisions. This action is designated DBO-1. (Key Actions CO-1, CO-2)
- DM DB&O-3: Senior leaders create an environment that encourages the raising of concerns and questions, and is conducive to robust interaction and problem resolution. (Key Actions DM-2 and DM-3)
- LF DB&O-1: Leaders communicate and build trust in the organization. (Key Actions LF-1, LF-3, LF-4, LF-5, LF-6, LF-7, and LF-9)
- LF DB&O-4: ANO leaders are identifying and addressing individual and organizational performance issues. (Key Actions LF-1, LF-3, LF-5, LF-9, and LF-13)
- LF DB&O-5: ANO leaders drive excellence in processes and procedures through the Department Performance Improvement Meetings (DPRMs) and Aggregate Performance Improvement Meetings (APRMs). (Key Actions: LF-8, LF-11, LF-12 and LF-14)
- NF DB&O-8: Workers understand what it means to be “thinking and engaged” and practice the foundational behaviors (criteria) defined by the industry for the Nuclear Professional. (Key actions NF-1, NF-2, NF-6, NF-7, NF-8, and NF-9)
- NF DB&O-10: Application of fundamental behaviors is reflected in low rates of human performance errors and rework. (Key actions NF-1, NF-2, NF-3, NF-5, NF-6, NF-7, NF-9, and NF-11)
- OC DB&O-1: Leaders ensure nuclear safety is the top consideration in making decisions on workforce resources. Leaders use appropriate information to make strategic decisions regarding workforce needs. The information includes data supporting organization capability, e.g., knowledge gaps, attrition projections and demographic makeup (age and years of service - proficiency). This information is incorporated into an Integrated Strategic Workforce Plan (ISWP) that leaders use to ensure the organization has the necessary capacity and skills for safe and reliable plant operation. (Key Actions OC-1, OC-2, OC-3, and OC-4)

- Safety Culture (SC) DB&O-1: All individuals take personal responsibility and are accountable for displaying core values and behaviors that support a healthy Nuclear Safety Culture at ANO. (Key Actions SC-5, SC-6, SC-7, SC-10, and SC-19)
- SC DB&O-3: Leaders create an environment where upward communication/feedback is sought out, valued, and rewarded. Leaders create communication opportunities, encourage the free flow of information, and respond to individuals in an open, honest, and no-defensive manner. Trust, respect and a sense of teamwork permeate the ANO organization. (Key Actions SC-7, SC-8, SC-9, and SC-11)
- SC DB&O-8: Nuclear safety is constantly scrutinized through a variety of monitoring tools, including effective use of the Nuclear Safety Culture Monitoring Panel and Corporate Oversight. (Key Actions SC-1, SC-2, SC-3, SC-14 and SC-15)
- Training to Improve Organizational Performance (TR) DB&O-3: Resources in key departments, including the training department, are sufficient to support training for organizational performance improvement. (Key Action TR-5)

To evaluate the licensee's corrective action effectiveness, the team reviewed:

- Confirmatory Action Letter and Area Action Plan Actions Effectiveness (LO-ALO-2018-00014)
- Nuclear Safety Culture Area Action Plan Closure Report
- Nuclear Safety Culture Monitoring Panel Meeting Minutes
- Nuclear Safety Culture Closure Readiness Evaluation
- Station and CRP metrics, as well as other relevant performance monitoring data
- Synergy and Organizational Health Index (OHI) Survey Results and Data
- Interviewed a cross section of station management and employees

To evaluate the licensee's corrective action effectiveness, the team conducted seven focus group discussions with ANO personnel, including maintenance, operations, planning, and engineering. Focus group discussions and interviews were conducted using questions related to the areas of leadership, personal accountability, questioning attitude, problem identification and resolution, change management, decision making, effective communications, and continual learning. Additional insights were gathered by reviewing documents related to ANO's safety culture, including safety culture assessment reports, the Nuclear Safety Closure Readiness Evaluation, OHI survey results and corrective actions associated with the most recent OHI survey, and Nuclear Safety Culture Monitoring Panel meeting minutes. The team evaluated the Nuclear Safety Culture Monitoring Panel to verify their effectiveness in continuously monitoring the safety culture at ANO. In addition, the team evaluated the corrective actions and effectiveness criteria established by the licensee in aggregate for the reviewed DB&Os.

Based on focus group discussions, the team determined that most personnel believed that ANO management places an appropriate level of emphasis on safety. In addition, personnel stated that they are free to stop work and resolve issues concerning safety with management support. Most personnel feel that safety standards have been raised to an appropriate level at the site. The team determined that because the work management process was not identified to be a significant contributor to declining safety performance during the NRC's 95003 inspection, certain isolated organizations within the work management process received less attention in the area of safety culture improvement than other work groups. This has resulted in challenges with interdepartmental coordination.

Most personnel interviewed in the focus groups agreed that staffing levels had increased; however, some individuals felt that more personnel are still needed in some work groups. Those individuals stated that ANO had communicated to them that they would continue to hire more personnel. The team determined that ANO had increased staffing at the site using the Nuclear Strategic Plan. The Nuclear Strategic Plan for ANO indicated that ANO would hire additional staff in the future to meet the needs of the organization. In addition, most personnel interviewed stated that they were receiving the necessary amount of training in order to qualify and perform their jobs safely. Most personnel stated that the use of mentors was a positive mechanism to transfer knowledge from the senior personnel to the junior personnel.

Most personnel interviewed stated that the Behavior Based Safety program (peer-to-peer coaching) was an effective method to help each other maintain high safety standards. The team determined that this process was effective in supporting leaders in reinforcing fundamental behaviors and fostering worker ownership and engagement in licensee performance.

Through a review of the licensee's 2017 OHI survey combined with the results of the team's focus group discussions and interviews, the team identified that ANO did not identify a potential priority group following the most recent safety culture survey. A priority group is a work group whose safety culture survey results were sufficiently more negative than the general population to warrant additional evaluation and possible development of an action plan to address the underlying causes for those negative responses. While reviewing Safety Culture DB&O-8, which states, "Nuclear safety is constantly scrutinized through a variety of monitoring tools," the team reviewed the process that Entergy used to evaluate the safety culture of the station, which had changed to use the OHI Survey. The team identified that Entergy had previously relied upon multiple external monitoring tools to identify potential priority groups and provide information and possible causes from the survey results. Previous monitoring tools appropriately included qualitative assessment tools, such as interviews and focus groups, to identify causal factors for significant negative response trends. However, the Entergy change management process did not identify that the OHI survey did not include qualitative evaluation tools. The team concluded that the Entergy program had adequate steps to address priority groups when they are recognized, but did not have steps to make a determination whether any work groups should be classified as a priority group. The team noted that the ANO Safety Culture Monitoring Panel reviewed the OHI survey results and had been developing an action plan, but did not specifically consider whether any work groups should be considered for treatment as priority groups. The team concluded that this was because the Entergy program did not require a qualitative evaluation be performed for significant negative response trends. In

response to this concern, ANO wrote Condition Reports CR-ANO-C-2018-01736 and CR-HQN-2018-00803 and Learning Organization Report LO-ALO-2018-00029 (Corrective Action 28). Entergy stated that they would take the following actions and provide the results to the NRC for review. Changes to this plan may not be made without a review by the Nuclear Safety Culture Monitoring Panel.

- (1) Revise the Entergy program to address identifying potential priority groups and if safety culture concerns are identified, conduct qualitative analysis of the survey results to determine appropriate actions to address those concerns. The results of the analysis and any planned actions will be tracked via Learning Organization Report actions and presented in an applicable management forum;
- (2) Perform interviews and focus group discussions with a representative sample of site personnel for significant results identified from the 2017 OHI survey and ensure appropriate corrective actions have been developed; and
- (3) Perform interviews and focus group discussions with a representative sample of site personnel, if necessary, after receiving the results of the upcoming 2018 OHI survey.

The team concluded that these actions were appropriate to establish an adequate understanding of the causes for negative responses to the OHI survey results, to ensure that priority groups would be appropriately identified, and to develop appropriate corrective actions.

Based on the actions taken by the licensee, data evaluated by the team, and observations performed on site, the team concluded that the actions taken to address the Safety Culture inspection focus area were effective. Therefore, the Safety Culture inspection focus area of the CAL is closed.

d. Closure of CAL Inspection Focus Area: Service Water System Self-Assessment

Background

On January 26, 1990, ANO committed to establishing a program to address biofouling in raw water cooling systems which included chlorination, inspection and cleaning, and periodic flow tests. This included conducting periodic flow tests of the safety-related heat exchangers cooled by the service water (SW) system and periodic flushes of normally stagnant SW system pipe sections. ANO's December 2015 assessment of their SW Program documented seven problems, and stated that the overall program health was good with respect to the primary goal of ensuring the system's ability to provide its required heat removal function. The report stated that the program had maintained flows above required limits, although problems were identified with improving low flow margins for some components, inadequate configuration control, inadequate alignment between governing documents, and implementation actions that need to be addressed. Specifically, the Unit 2 emergency diesel generator heat exchangers (2E-20/63/64A and B), shutdown cooling heat exchangers (2E-35A and B), and B control room chiller condenser (2VE-1B) had a longstanding trend of having low flow margins, although the flows have been maintained above the required flow.

The 95003 inspection team noted that the ANO SW Program assessment did not classify the long-term, low flow margin trends as problems because credit was given for the site processes to elevate awareness of the margin concern, the effectiveness of past actions to sustain acceptable flow, and the success of recently performed actions at improving flow margin. The NRC team concluded that ANO had been attempting to manage a problem that affected the entire SW system by reducing margins to keep the system within the minimum requirements. The team concluded that the assessment applied a systematic approach to review of the SW Program, but did not provide a realistic assessment of the effectiveness of the program in identifying and correcting longstanding degraded conditions. The NRC team concluded that ANO did not have an adequate assessment of system performance problems or a holistic plan to correct the problems and causes.

As part of the 95003 Inspection Report 05000313/2016007 and 05000368/2016007 (ADAMS Accession No. ML16161B279), the NRC issued ANO four Green, non-cited violations and documented one licensee-identified finding involving the service water system.

The licensee's progress in implementing the Service Water System Self-Assessment, Action SW-1, was reviewed in NRC Inspection Report 05000313/2016008 and 05000368/2016008 (ADAMS Accession No. ML17059D000) to assess how the focused self-assessment was being performed while the assessment was in progress. The NRC closed SW-1 in NRC Inspection Report 05000313/2017011 and 05000368/2017011 (ADAMS Accession No. ML17195A478). During this inspection, the team reviewed the focused self-assessment report "Service Water System Operational Performance Inspection," and NUENERGY Report NUI-EOI-ANO SWS SA 2016-01; the Service Water System Improvement Plan; Condition Reports; and the CRP Action Effectiveness Summary for SW-1. The team compared the recommendations and problems identified in the self-assessment to the actions in the Service Water System Improvement Plan to verify that the actions needed to address material condition challenges and equipment reliability were included in the plan and were scheduled for completion in an appropriate timeframe based on the current conditions and safety significance. The team also verified that issues were entered into the corrective action program for resolution.

The team concluded that the focused self-assessment was completed in a manner that was consistent with the guidance in NRC Inspection Procedure 93810. The team interviewed the Unit 1 and 2 service water system engineers, the service water system self-assessment team leader, the Microbiological-Influenced Corrosion Program engineer, the Inservice Inspection Program engineer, the heat exchanger engineer, and the Design and Programs Engineering manager to discuss the material history of the system, degradation mechanisms, and previous actions to address those challenges. These discussions focused on the licensee's understanding of pitting corrosion, piping occlusion, flow degradation, and component functionality. The team concluded that the licensee identified all issues of concern in the corrective action program and understood the degradation mechanisms for service water system piping and components, which involved a combination of microbiologically-influenced corrosion and galvanic corrosion.

Scope of Review

Since August 29, 2016, the NRC has performed quarterly CAL inspections of individual action items and found the items to be complete and effective. The complete list of

individual action items along with descriptions and relevant inspection reports is provided in Attachment 3. To ensure the licensee adequately addressed the CAL inspection focus area, the NRC team reviewed the focus area for the key DB&O to verify that the licensee showed sustained improvement. Specifically, the following DB&O was reviewed:

- Service Water DB&O: To ensure conditions adverse to quality are identified and resolved, ANO will conduct a focused self-assessment of Units 1 and 2 service water systems in accordance with station procedures and NRC Inspection Procedure 93810, "Service Water System Operational Performance Inspection." (Key Action SW-01)

To evaluate the licensee's corrective action effectiveness, the team reviewed:

- Service Water System Closure Readiness Evaluation
- Comprehensive Recovery Plan Action Effectiveness for NRC closure for SW-01
- Comprehensive Recovery Plan Action Item Closure SW-01
- Service Water System Operational Performance Inspection Report (SWSOPI) (LO-ALO-2016-00078)
- NUENERGY Innovative Solutions, Inc., Support of ANO 2016 Service Water Self-Assessment Activities Report (NUI-EOI-ANO SWS SA 2016-01)
- Design and Licensing Basis Area Action Plan Closure Report
- Confirmatory Action Letter and Area Action Plan Actions Effectiveness (LO-ALO-2018-00014)
- Interviewed engineers, program owners, supervisors, and managers with a connection to service water

The team evaluated the corrective actions and effectiveness criteria established by the licensee in aggregate for the reviewed DB&O. The team verified that the licensee was following the Service Water Improvement Plan to address the material condition challenges and equipment reliability in an appropriate timeframe based on the current conditions and safety significance. The team noted that the licensee replaced the chemical treatment system for both units and several hundred feet of service water piping in both units, and continues to replace piping and perform testing. In addition, the team noted that the licensee has become more proactive in finding, addressing, and evaluating pipe pitting. The licensee accomplished this by addressing all the currently existing through-wall leaks and adopting improved nondestructive testing methods and water treatment. The licensee also prioritized the nondestructive testing and the replacement of piping and major components based on the risk significance. In particular, the team noted strong ownership by all the engineers, program owners, supervisors, and managers interviewed.

Based on the actions taken by the licensee, data evaluated by the team, and observations performed on site, the team concluded that the actions taken to address

Service Water Self-Assessment were effective. Therefore, the Service Water Self-Assessment inspection focus area of the CAL is closed.

.2 CAL Action Follow-up (IP 92702)

This section describes the scope, corrective action, and inspection of the remaining open CAL items.

Actions to Address Equipment Reliability and Engineering Program Deficiencies

DB-11 Perform one benchmark or one self-assessment between March 1, 2016, and March 1, 2020, for each of 24 engineering programs. (CR-ANO-C-2015-02833 CA-28, and CR-ANO-C-2016-00614 CA-8 and CA-22)

During the 95003 supplemental inspection, the NRC team found that the ANO snapshot assessments of engineering programs were conducted in a systematic manner, some used industry experts, and identified program deficiencies. However, the NRC team concluded that ANO's snapshot assessments were not fully effective in assessing whether some programs addressed longstanding equipment performance trends or whether plant components were appropriately included in programs. In response to the NRC team's observations, ANO initiated actions (CR-ANO-C-2016-00614) to conduct benchmarking of engineering programs and assign experienced mentors to program owners.

During the NRC's first review of DB-11 in Inspection Report 05000313/2018012 and 05000368/2018012 (ADAMS Accession No. ML18092A005), the team identified missing design bases calculations and licensing documents related to the High Energy Line Break (HELB/MELB) program. The licensee had failed to initiate condition reports or corrective actions for missing design bases calculations or licensing documents identified in CALC-ANOC-CS-16-00004, "HELB Program Design Basis Consolidation Report," Table 9-1. The team concluded that DB-11 would be held open to review the licensee's corrective action plan to locate or reconstitute the missing design information.

For this inspection, the team reviewed corrective actions associated with this concern to evaluate the licensee's corrective action effectiveness. As a result of the NRC's first review, the licensee re-evaluated the high energy line break program to determine the appropriate resolution of the design documents that could not be readily retrieved. The licensee developed a High Energy Line Break Design Basis Documents Project Plan, documented in Condition Report CR-ANO-C-2015-02833 (CA-27 and CA-28) with specific actions assigned to each of the 12 affected plant areas to either locate or create the required documentation (CAs 122-133). In addition, the Project Plan also required updating the design drawings for these areas to ensure that if modifications were performed before the required documentation was identified that additional actions were required to create the required calculations.

At the time of this inspection, the licensee believed they located the required documentation for at least three of the remaining 12 areas. The licensee is continuing to search for the documents, have discussions with the vendor, and has hired an investigator to assist in locating documents for the remaining areas.

The team reviewed the Project Plan, procedures, calculations, corrective action documents, and interviewed station personnel to determine that the High Energy Line Break Design Basis Documents Project Plan was adequate to ensure design basis reconciliation for high energy line break locations.

Based on the actions taken by the licensee, information evaluated by the team, and observations performed on site, the team concluded that the actions taken to address DB-11 were effective. Therefore, DB-11 is closed.

PH-12 The following list contains equipment reliability issues in systems or components necessary for the safe and reliable operation of the unit(s) that will be resolved over the next two unit operating cycles. The intent of this action is to demonstrate improved equipment reliability by resolving long-standing equipment issues. (CR-ANO-C-2014-00259 CA-130, CR-ANO-C-2015-02832 CA-33 through CA-35, CR-ANO-C-2015-03029 CA-13, CR-ANO-2-2013-02242 CA-50, and CR-ANO-2-2015-02879 CA-24)

- Unit 1 reactor building coatings margin improvement
- Unit 1 NI-501 detector replacement
- Unit 2 shutdown cooling heat exchanger replacement
- Unit 2 instrument air compressor replacement
- Fire suppression system reliability improvement
- Diesel fire pump engine overhaul
- Radiation monitor reliability improvement
- Unit 2 component cooling water (CCW) system performance improvements
 - 2P-33C CCW pump overhaul
 - 2P-33B CCW pump overhaul
 - 2E-28B CCW heat exchanger replacement
- Service water and circulating water chemical treatment system upgrade
- Unit 2 cooling tower crane replacement
- Unit 2 condensate pump 2P-2A rebuild
- Unit 1 letdown heat exchanger replacement
- Decay heat check valves DH-17 and DH-18 replacement
- Unit 1 reactor vessel head O-ring leakage resolution
- SU2 transformer inspections

- SU3 transformer inspections
- Complete design of Unit 1 integrated control system reverse engineered modules
- Implement single point vulnerability mitigation and elimination efforts

The licensee's Collective Evaluation identified weaknesses with the organization's ability to identify, prioritize, fund, and implement modifications and other capital improvements required to address equipment issues in a timely manner. Multiple aspects of this process were determined to have challenges. The licensee committed to complete multiple actions to improve equipment reliability related to items in the Site Integrated Plant Database process. Actions PH-1 through PH-11 in the Plant Health Area Action Plan caused the licensee to identify the equipment reliability problems and improve the processes for prioritizing, planning and funding the projects, while PH-12 through PH-14 committed to implement specific improvement projects. CAL action PH-12 committed ANO to implement a list of specific equipment reliability improvements that had plans developed that were scheduled to be completed between early 2016 and late 2018. The NRC reviewed a sample of risk significant items from the above list to evaluate the effectiveness of the licensee's corrective actions to the long-standing equipment issues. The NRC has reviewed items over the last 2 years and reviewed the final seven items of interest in this current inspection.

The team reviewed the licensee's progress in resolving equipment reliability issues by evaluating the actions taken to address the following:

- Unit 2 shutdown cooling heat exchanger replacement

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. The licensee has replaced this equipment, and the team noted that the equipment has been operating with no major issues since these replacements. This item is closed.

- Fire suppression system reliability improvement

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. The licensee has improved the reliability of the fire suppression system, and the team noted that the equipment has been operating with no major issues since these improvements. The team noted that there was one work order that was cancelled inappropriately, but an extent of condition review conducted by the licensee revealed that there were no further work orders cancelled inappropriately. This item is closed.

- Service water and circulating water chemical treatment system upgrade

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. The licensee has replaced this equipment in both units and added

alternate injection points to ensure the chemical protection was available during outages. The team noted that the equipment has been operating with no major issues since these replacements. This item is closed.

- Decay heat check valves DH-17 and DH-18 replacement

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. The licensee has replaced these check valves with valves of a different design intended to minimize back-leakage through the check valves. The team reviewed the post-maintenance testing of the valves prior to being declared operable. This item is closed.

- Startup Transformer 2 inspections

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. The licensee has inspected this equipment, and the team noted that the equipment has been operating with no major issues since these inspections. This item is closed.

- Complete design of Unit 1 integrated control system reverse engineered modules

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. This item is intended to address an obsolescence issue before it becomes a reliability problem because the manufacture no longer supplies spare parts for the system. The licensee selected 13 of the 23 modules to be reverse-engineered and have new modules manufactured. Six of the remaining modules were partially reverse-engineered and had components replaced on existing boards. The remainder of the boards were not reverse engineered due to having a sufficient spare stock or because they had no components subject to time degradation. The components that were not reverse-engineered were scheduled to be refurbished to restore each module to the standards in SPEC-16-00001-MULTI, "Electronic Assembly Refurbishment/Repair."

The licensee has replaced or has plans to refurbish this equipment, and the team noted that the equipment has been operating with no major issues. This item is closed.

- Implement single point vulnerability (SPV) mitigation and elimination efforts

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. This was a proactive action to identify components that have the potential to create plant transients if they fail while in service, and was not intended to correct existing reliability problems. The licensee has implemented these mitigation and elimination efforts. This item is closed.

The items documented above are the final items from PH-12 that the NRC planned to review. Based on the samples in this and previous inspections, the team concluded that the licensee is resolving the equipment reliability issues listed. Therefore, this item is closed.

PH-13 The following list contains equipment reliability issues that are being evaluated by the Plant Health Committee for resolution commensurate with the potential impact on safe and reliable operation of the units by December 20, 2018. For items not resolved by the due date, the Plant Health Committee will provide the safety basis for the extension. (CR-ANO-C-2015-02832 CA-38, and CR-ANO-C-2015-03029 CA-34)

CAL action PH-13 committed ANO to implement a list of specific equipment reliability improvements that did not have improvement plans that were fully developed or funded when the commitment was made. Since the CAL was written, ANO completed planning, scheduling, and budgeting activities for each of the actions listed below. The team reviewed the actions that were completed as samples to evaluate the effectiveness of the licensee's corrective actions to the long-standing equipment issues.

- Resolution of Unit 1 emergency diesel generator exhaust stack thinning
- Resolution of Unit 2 emergency diesel generator exhaust stack thinning
- Unit 2 spent fuel pool cooling system performance improvement
- Service water piping replacement
- Correct back-leakage into the Unit 1 boric acid system
- Unit 2 emergency feedwater Terry turbine governor replacement
- Unit 2 spare service water motor issue resolution
- Unit 1 high pressure injection pump P-36B motor refurbishment
- Tornado/missile protection for emergency feedwater piping resolution
- Unit 1 reactor vessel head leak-off line replacement
- Unit 1 and Unit 2 super particulate iodine and noble gas monitor replacement

During the 95003 supplemental inspection, the NRC team identified weaknesses in the selection of the "right work" in the normal work planning process and the backlog reduction process. ANO had defined "right work" as the grouping of work activities, which best met the equipment reliability needs of the station by balancing the priority to correct degraded conditions against the capability of the station to complete the activity. The mechanical, electrical, and instrumentation and control maintenance coordinators for the online maintenance disciplines and the backlog project manager for the backlog reduction team select the "right work." The NRC team noted that the process did not seek input from operations and engineering to help identify the "right work" activities. For normal online work, ANO's implementation resulted in a poor work bundling, excessive equipment unavailability, and delays in addressing difficult or complex tasks.

The team reviewed the licensee's progress in resolving equipment reliability issues by evaluating the actions taken to address the following:

- Unit 1 and Unit 2 Super Particulate Iodine and Noble Gaseous Monitor (SPINGS) replacement

The team noted that the licensee has placed one of the SPINGS in service successfully in Unit 1, with the other three Unit 1 SPINGS planned to be fully operable by the end of May 2018. Unit 2 SPINGS are planned to be fully operable by the end of the 2018 fall refueling outage. The team noted that the installed SPING has been operating with no major issues since being replaced. This item was the final item the NRC planned to review from PH-13. Therefore, this item is closed.

PH-14 Track and audit the completion of the following equipment reliability issues related to the White Finding and the potential for additional unplanned plant trips. (CR-ANO-C-2015-02831 CA-31, CR-ANO-C-2015-02833 CA-44, and CR-ANO-C-2015-03029 CA-2, CA-3, CA-4, and CA-6)

Action PH-14 committed to complete corrective actions that were planned, scheduled, and funded at the time the commitment was made in order to address the causes and extent of condition/extent of cause from three scrams in Unit 2.

The team reviewed the licensee's progress in resolving equipment reliability issues by evaluating the actions taken to address the following:

- Audit completion of repair of 161 kV Russellville East Transmission Line Lightning Protection System.
- Audit completion of Entergy Transmission inspection of static line grounds on Transmission lines that end in ANO switchyard and insure the acceptance criteria per Entergy Transmission Standards. Includes (1) Pleasant Hill (500 kV), (2) Fort Smith (500 kV), (3) Mabelvale (500 kV), and (4) Pleasant Hill (161 kV).
- Replace damaged Unit 2 Unit Auxiliary Transformer 6900 V and 4160 V buses and ducting.
- Audit completion of Startup Transformer 3 non-segmented bus inspections, to include visual confirmation of filler material under taped, bolted connections.
- Verify that all medium voltage connections have adequate fill and air gap.
 - Issue work requests to inspect all ANO-1 and ANO-2 medium voltage connections for the existence of corona effects
 - Issue work requests to re-tape all ANO-1 and ANO-2 medium voltage connections in accordance with OP-6030.110, and ensure adequate fill is installed.
 - Either track completions of the resulting work orders listed above or close this corrective action to the associated work orders with concurrence by the Condition Review Group and/or Corrective Action Review Board, as required.

The team reviewed the system health reports and work orders and interviewed plant personnel regarding the specific equipment reliability issues. The licensee has inspected and repaired this equipment as needed, and the team noted that the equipment has been operating with no major issues since these improvements.

The items documented above are the final items in PH-14. These actions have been reviewed, and inspectors have verified that the licensee has resolved the equipment reliability issues listed. Therefore, this item is closed.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On May 31, 2018, the team presented the inspection results to Mr. R. Anderson, Site Vice President, and other members of the licensee staff at a public meeting. The licensee acknowledged the issues presented. The inspectors verified no proprietary information was retained or documented in this report.

LIST OF CONFIRMATORY ACTION LETTER ITEMS CLOSED AND DISCUSSED

Closed

Equipment Reliability and Engineering Program Deficiencies

DB-11	(Section 4OA5.2)
PH-12	(Section 4OA5.2)
PH-13	(Section 4OA5.2)
PH-14	(Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED

Audits/Self Assessments

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Corporate & Independent Oversight Area Action Plan Closure Report	March 2018
	Decision Making and Risk Management Area Action Plan Closure Report	March 2018
	Design and Licensing Basis Area Action Plan Closure Report	March 2018
	Human Performance Closure Readiness Evaluation	0
	Leadership Fundamentals Area Action Plan Closure Report	March 2018
	Nuclear Fundamentals Area Action Plan Closure Report	March 2018
	Nuclear Safety Culture Area Action Plan Closure Report	March 2018
	Nuclear Safety Culture Closure Readiness Evaluation	0
	Organizational Capacity Area Action Plan Closure Report	March 2018
	Plant Health Area Action Plan Closure Report	March 2018
	Preventive Maintenance Program Area Action Plan Closure Report	March 2018
	Procedure and Work Instruction Quality Area Action Plan Closure Report	March 2018
	Service Water System Closure Readiness Evaluation	0
LO-ALO-2016-00078	Confirmatory Action Letter Key Improvement Action 6: Service Water System Operational Performance Inspection (SWSOPI)	December 2016
LO-ALO-2018-00014	Confirmatory Action Letter (CAL) and Area Action Plan (AAP) Actions Effectiveness	February 2018
LO-ALO-2018-00040	Comprehensive Recovery Plan Procedure Reconciliation	March 2018
NUI-EOI-ANO SWS SA 2016-01	Support of ANO 2016 Service Water System Self Assessment Activities	December 2016

Condition Reports (CR-ANO-)

C-2015-02829	C-2015-02833	C-2015-04876	C-2016-00435	C-2016-00524
C-2016-00546	C-2016-00614	C-2016-01736	C-2017-00926	C-2017-02836
C-2018-00554	C-2018-01118	C-2018-01189	C-2018-01500	C-2018-01502

C-2018-01552	C-2018-01554	C-2018-01555	C-2018-01556	C-2018-01558
C-2018-01560	C-2018-01736	1-2015-02032	1-2016-04138	1-2016-04924
1-2016-05076	1-2016-05100	1-2016-05107	1-2018-00541	1-2018-01178
2-2016-00361	2-2016-00421	2-2016-00672	2-2016-00674	2-2016-03882
2-2016-04014	2-2016-04175	2-2018-00724		
CR-HQN-2018-00024	CR-HQN-2018-00298	CR-HQN-2018-00786	CR-HQN-2018-00803	

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
COPD-024	Risk Assessment Guidelines	65
EN-DC-115	Engineering Change Process	23
EN-DC-134	Design Verification	7
EN-DC-329	Engineering Programs Control and Oversight	6
EN-FAP-OM-016	Performance Management Process and Practices	8
EN-LI-121	Trending and Performance Review Process	24
EN-OM-126	Management and Oversight of Supplemental Personnel	6
EN-QV-136	Nuclear Safety Culture Monitoring	12
EN-WM-100	Work Request (WR) Generation, Screening, and Classification	13
EN-WM-104	On Line Risk Assessment	16
EN-WM-105	Planning	20
PI-001	Paired Observation Program	4
SEP-EPCO-ANO-001	ANO Engineering Programs Control and Oversight	3

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	1R27 Outage Meeting & Communication Schedule	
	Action Plan to Address Unit 1 Scope and Selection Stability Red Performance Indicator	
	ANO Employee Handbook	
	ANO People Health Committee – Engineering Minutes	February 15, 2018
	ANO Integrated Strategic Workforce Plan (ISWP)	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Average Functional Area Scores and Weighted Fleet Index	
	Comprehensive Recovery Plan Metrics	January - February 2018
	Critical Preventive Maintenance Index – ANO Unit 1 and Unit 2	February 2018
	Equipment Reliability Index – ANO Unit 1 and Unit 2	February 2018
	High Energy Line Break (HELB) Design Basis Documents Project Plan	0
	Main Control Room Deficiencies – ANO Unit 1 and Unit 2	March 2018
	Nuclear Safety Culture Monitoring Panel Meeting Minutes	Various
	Nuclear Safety Culture Observation Forms	February 1, 2018 – March 30, 2018
	OHI Survey Results	2016, 2017
	Red Comprehensive Recovery Plan Indicators and Associated Action Plans	
	Site Scorecard – ANO Unit 1 and Unit 2	
	Synergy Survey Results	2016
	Tracking Spreadsheet and Work Curves for Procedure Changes	
	Weighted Functional Area Index	
CALC-ANOC-CS-16-0004	Arkansas Nuclear One Units 1 & 2 High Energy Line Break (HELB) Program Revalidation (HELB Program Design Basis Consolidation Report)	1
Drawing A-7003 Sheets 1-16	High Energy Line Break (HELB)	various
WO-ANO-52550018	CV-3811 PM IAW OP-1412.001	
WT-WTHQN-2017-00546	Perform Effectiveness Review of Fleet Implementation of DNP SDP	

CONFIRMATORY ACTION LETTER ITEM STATUS

Significant Performance Deficiencies

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
CO-5 OC-5	Develop and issue an Entergy change management procedure for planning, execution, and follow up of "high risk" changes. The procedure will include specific expectations for reviewing the effectiveness of "high risk" changes. Perform a snapshot benchmarking to check the approach for change management against industry practices.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
DB-1	Establish metrics to monitor performance that would indicate that leadership focus on minimizing risk and nuclear safety results in improvement to the health of maintenance rule systems.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
DB-2	Facilitate behavior change by rewarding performance that indicates leadership behaviors are focused on minimizing risk and nuclear safety by incorporating maintenance rule monitoring goals into the supervisor and above incentive plan.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
DB-3	Provide training to Engineering, Operations, and Planners to increase the knowledge and skills regarding passive barriers and other Design Basis Features.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
DM-1	Establish a decision making tool for station personnel that includes expectations for use at ANO. The intent of this action is to establish a "minimum risk option" behavior that drives the decision maker to develop multiple solutions and drive the decision that has the least risk.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
DM-6	Deliver risk recognition training and develop curriculum for all site personnel with unescorted access.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
DM-7	Develop and implement training on procedures governing risk assessment for work management SROs, work week managers, shift managers, and unit coordinators.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
DM-8	Develop and implement a familiarization (FAM) guide for the function of work management SRO that will ensure clear understanding of job functions.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
DM-10	Revise procedure EN-WM-104, "On-Line Risk Assessment," to include guidance for classifying as high risk those work activities involving a credible risk concern with unacceptable consequences and first-of-a-kind or first-in-a-while activities.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
DM-11 VO-19	Revise project management procedures to ensure high consequence risks are properly identified and eliminated/mitigated through a structured risk management process.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
FP-1	Develop external flooding design basis documentation so configuration control is defined and maintained. Develop an engineering report and flood protection drawings similar to fire protection drawings to clearly document the flooding design basis and credited flood protection features (credited external flood protection features and credited operator actions), and assign unique equipment ID to each flood protection feature and boundary.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
FP-2	Develop internal flooding design basis documentation so configuration control is defined and maintained. Develop an engineering report and flood protection drawings similar to the fire protection drawings to clearly document the flooding design basis and credited flood protection features (credited internal flood protection features and credited operator actions). Update the Flooding Upper Level Document (ULD). Assign unique equipment identification to each flood protection feature and boundary.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Discussed, awaiting licensee action
		5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
FP-3	Label external flood barriers in the plant to provide in-field awareness of flood protection features.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
FP-4	Establish an Engineering Barrier Program to include external and internal flood protection in accordance with the requirements of procedure EN-DC-329, "Engineering Programs Control and Oversight." Assign program owner and backup. Establish PMs for external and internal flood protection features including scope, frequency, testing criteria, and acceptance criteria.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
FP-5	Revise procedure EN-DC-329, "Engineering Programs Control and Oversight," to include external and internal flood protection in the Engineering Program List. Revise the flooding programmatic aspects of procedure EN-DC-150, "Condition Monitoring of Maintenance Rule Structures." Revise EN-DC-136, "Temporary Modifications," to incorporate external flood considerations.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
FP-6	Validate that all external flood gaps identified from the review of documentation for credible flood paths and the follow-up walk downs have been resolved.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
FP-7	Perform walk downs of all credited internal flood protection features and document the results in an engineering report.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Discussed, awaiting licensee action
		5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
FP-8	Validate that all internal flood gaps identified from the review of documentation for credible flood paths and the follow-up walk downs have been resolved.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Discussed, awaiting licensee action
		2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
FP-9	Establish the Program Notebook and initial Program Health Report for flood protection in accordance with procedure EN-DC-143, "Engineering Health Reports," to identify, communicate, prioritize and drive resolution of issues that challenge an effective flood protection strategy including performance indicators, initial color rating (Red or Yellow), and action plan.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
FP-13	Develop and conduct initial and continuing training essential to understanding and maintaining the license basis for flood barrier features. Address Operations, Engineering, and Work Planning groups.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
VO-1	Designate a Subject Matter Expert (SME) to oversee implementation of the procedure for Management and Oversight of Supplemental Personnel and contractor oversight for ANO.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
VO-4	Establish a Vendor Oversight Team to drive continuous improvement in Vendor Oversight.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
VO-5	Develop and implement a process for monitoring of supplemental oversight plan compliance.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
VO-6	Establish specific templates/guidance/examples to support consistent development of supplemental oversight plans.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
VO-7	Develop and implement initial and continuing training on the procedure for management and oversight of supplemental personnel. Training is for site contract managers and project managers.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Discussed, awaiting licensee action
		2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
VO-8	Develop and implement a contract management familiarization guide to include determination and documentation of work scope, risk assessment, incentives and penalties, and performance monitoring. Include review of operating experience, such as the contractual aspects of the stator lift rig failure and other related industry events in the familiarization guide.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
VO-9	Perform an organizational capacity assessment for vendor oversight, including contract management and administration, critical procurements, and department-specific resource impacts.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
VO-10	Evaluate span of control with regard to responsible oversight of vendors, and place actions to address identified weaknesses in the Corrective Action Program.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
VO-11	Revise the “Supplemental Personnel Expectations Brief Checklist” to include supplemental personnel receiving a site employee handbook and a discussion by responsible management on the site employee handbook and expectations for use.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
VO-14	Establish a fleet charter team or ANO team to address weaknesses in the procedures for contractor oversight. Specifically, identify gaps in the procedures to align with industry guide AP-930, "Supplemental Personnel Process Description." Assign additional actions as warranted to address any gaps identified.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
VO-15	Review current processes in Engineering related to Vendor Oversight Fundamental Problem. Determine if additional actions are required to address less formal interfaces with suppliers of contract services. Assign additional actions as warranted to address any gaps identified.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
VO-18	Revise Project Management procedures to ensure projects are organized and managed with (1) effective support by subject experts and (2) effective vendor and technical oversight.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Discussed, awaiting licensee action
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
VO-20	Issue a procedure for management and oversight of supplemental personnel including improvements to (1) defined responsibilities, (2) assessment of risk, and (3) vendor oversight plans.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Discussed, awaiting licensee action
		8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
VO-21 DM-9	Develop and implement recurring training for project management personnel on risk recognition and conservative decision-making.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number(s)	Status
VO-23	Revise EN-DC-114, Project Management, to provide guidance in specifying contract language which will ensure detailed engineering calculations, quality requirements and standards are provided for internal and third party review, in accordance with revised EN-MA-119, Material Handling Program, when specially designed temporary lift assemblies are to be used.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
VO-24	Revise EN-MA-119, to require a documented engineering response to evaluation critical lifts if using any specially designed temporary lifting device, any lifting device that cannot be load tested per EN-MA-119 criteria, or any lifting device without a certified load rating nameplate rating affixed to it.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
		2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Additional information added

Identifying, Assessing and Correcting Performance Deficiencies

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
CA-1	Establish Corrective Action Program (CAP) content in the ANO Employee Handbook to include behaviors for prompt identification of conditions into CAP.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
CA-3	Conduct an organizational capacity study to determine and correct staffing and proficiency needs, including needs to support CAP implementation. Establish a People Health Committee (APHC) to support ongoing monitoring and adjustments.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
CA-4	Develop and implement initial and continuing CAP training for station employees, ACE/RCE evaluators, responsible managers (including CARB and CRG), DPICs, OE specialists and points of contact, and performance improvement personnel.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
CA-5	Train investigators, managers and Performance Improvement (PI) Staff on proper causal techniques, manager oversight expectations and engagement, and conducting quality reviews of completed cause evaluations and corrective actions. Establish initial and refresher training requirements in these areas.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
CA-6 *SII*	Implement training, benchmarking, process improvements, and monitoring/feedback to improve the rigor, attention to detail, and overall quality of operability determinations and functionality assessments.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Discussed, awaiting licensee action
		8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
CA-7	Establish/refine key corrective action program station and group-level performance indicators.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Discussed, awaiting licensee action
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
CA-9	Revise the CARB process to require the Performance Improvement Manager to present the status of the condition reporting process using established metrics to the CARB.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Discussed, awaiting CA-7 closure and further inspection
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
CA-10	Improve the periodic performance reviews and oversight of corrective action program and operating experience performance in Department Performance Review Meetings and Aggregate Performance Review Meetings.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
CA-11	Revise EN-LI-102 "Corrective Action Program" to require a focused self-assessment every 2 years focused primarily on whether staffing levels support effective corrective action program implementation and oversight.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
CA-12	Develop metrics to evaluate and monitor the health of the operating experience program.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
CA-13	Establish an Operating Experience (OE) mentor to review OE responses and provide critical feedback.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
CA-14	For a period of one year, establish Corrective Action Review Board (CARB) oversight of selected operating experience (OE) responses to verify program implementation meets CARB standards.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
CA-15	Revise the Operating Experience (OE) actions for selected responses to require a pre-job brief from the OE specialist. This brief should include examples of missed opportunities from past OE responses and a review of the procedure requirements for a satisfactory OE written response.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
CA-16	Train each Operating Experience (OE) point of contact on their responsibilities and skills needed to recognize the applicability of OE, elevate OE, and use search tools to locate OE for evaluation.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Discussed, awaiting licensee action
		8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
CA-17	Revise Operating Experience (OE) Program procedure to include an annual review of the list of vendors providing safety-related products/services to ensure new suppliers are added.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
CO-2	Revise procedure EN-FAP-OM-002, "Management Review Meetings," to prioritize review of Nuclear Safety Culture status and regulatory performance to the operational excellence management review meeting agenda.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
CO-3	Align ANO and fleet key performance indicators with the industry and establish goals that are challenging and consistent with industry practices.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
DM-5	Benchmark a nuclear facility outside the Entergy fleet for its ability to recognize risk. Incorporate the learnings and develop a risk recognition training plan to be delivered at ANO.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
DM-12	Conduct benchmarking of a high performing station in the area of operations focus with a plan based on "Principles for Effective Operational Decision Making."	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DM-15	Perform a benchmark on a high performing station outside the Entergy Fleet on Operational Decision Making Instruction (ODMI) development, implementation and effectiveness reviews, and develop improvement actions based upon the results.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DM-22	Benchmark outside the Entergy fleet to identify best practices in the work management process.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
DM-23	Have a group from another plant perform a peer assist visit in work management.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Discussed, awaiting licensee action
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
LF-11	Create trending and issue performance review metrics to improve the review of leader behaviors and performance results.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
OC-6 LF-14	Create a simple tool to analyze externally identified performance issues both individually and in aggregate to present actionable data to the Aggregate Performance Review Meeting (APRM).	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Discussed, awaiting further inspection
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PH-9	Conduct a benchmark of the Plant Health Committee and Plant Health Working Group at a recognized industry leader in identifying and addressing equipment reliability issues. The intent of this action is to validate the action plan for improving our Plant Health Committee and establishing a Plant Health Working Group.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PM-6	The Event Report Review Board will review all formal operating experience (OE) evaluations for 12 months and initiate corrective action for any that do not meet management standards for quality.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
PM-9	Develop metrics for the number of open craft work order feedback requests.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PM-10	Reestablish the Preventive Maintenance (PM) Program health report for a period of at least 12 months.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
TR-2	Define and incorporate guidance in the condition report (CR) screening and review process to prompt discussion and/or action for conditions potentially warranting a training solution.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
TR-3	Define and incorporate practical guidance in Procedure EN-LI-121, "Trending and Performance Review," to support consideration of training as a potential solution for organizational performance issues.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
TR-4	Training Manager provide presentation(s) to managers and Department Performance Improvement Coordinators on the use of training to support organizational performance improvement.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
TR-5	Factor training needs into resources for key departments, including the training department, to ensure that resources support training for organizational performance improvement. This action refers to staffing to support training beyond that necessary for accredited programs.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
VO-16	Benchmark an industry leader outside the Entergy fleet to capture best practices in vendor oversight.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed

Human Performance

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
DB-9	Experienced mentors will be assigned to the component and programs areas from July 1, 2016, through July 1, 2017. This mentoring effort will focus on behaviors, qualification, and standards of the ANO component and programs areas to ensure full compliance and to build the knowledge and proficiency in these areas.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
DB-17	An engineering standard will be produced to provide sustainable, consistent guidance to station engineers in the performance of their duties. This standard will incorporate best practices for developing engineering products beyond simple procedural compliance and ensure that standards and expectations for performance of engineering duties are clearly articulated to the workforce.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DB-18	Re-baseline expectations for supporting information for NRC license amendment requests or relief requests based on past requests for additional information.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
DB-19	Provide Regulatory Assurance departmental training on development of NRC license amendment requests.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
DM-13	Assign a mentor from outside the Entergy fleet to coach and mentor each shift manager, emphasizing the aspect of leadership in operational focus.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
DM-14	Assign a mentor to review all Operational Decision Making Instructions until proficiency is demonstrated.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DM-16	Develop and implement training for key personnel on ODMI development, implementation, and effectiveness reviews.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DM-17	Develop roles and responsibilities for the quorum line participants in the work management process.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
LF-1	Conduct leadership assessments for the senior leadership team, managers and superintendents and establish individual development plans to support closing identified gaps in leader behaviors.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
LF-2	Establish and roll out an ANO employee handbook with attributes and behaviors supporting nuclear safety and long term strategic improvement. The purpose of the handbook is to communicate and reinforce key values and behaviors.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
LF-3	Provide supervisory training on constructive conversation skills.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
LF-4	As an interim action, establish weekly leadership alignment meetings for supervisors and above to reinforce actions and behaviors needed to achieve recovery objectives.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
LF-6	Benchmark an external organization for leadership fundamentals and develop improvement actions as warranted based upon the results.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
LF-8	As an interim measure, establish and implement external coaching for a sample of department and station performance review meetings in the Trending and Performance Review process.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
LF-10 NF-10	Establish and implement a paired observation program. This is a “coach the coach” program to improve the quality of interactions between supervisors and those they supervise.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
NF-1	Implement a What It Looks Like sheet for nuclear professional behaviors based on objectives in “Performance Objectives and Criteria.” Include a continued focus on the following four performance issues: <ul style="list-style-type: none"> • Procedure use and adherence • Challenging assumptions and decision making • Conservative bias and risk recognition • Low threshold for reporting issues. 	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
NF-3	Develop content for the Employee Handbook that addresses procedure use and adherence.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
NF-5	Develop content for the ANO supervisor training that addresses procedure use and adherence.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
NF-6	Revise procedure EN-OM-126, “Management and Oversight of Supplemental Personnel,” to ensure that supplemental employees receive the Site Handbook.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
NF-9 SC-8	Develop and implement a “field presence” initiative that promotes and measures leader field presence. The objective is to drive and verify field presence by leaders to engage with employees and reinforce high standards.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
OC-1	Perform organizational capacity assessments to determine staffing requirements for 16 key departments based on experience, training needs, knowledge management needs, timing of expected retirements, resignations and reassignments and the needs for a site with two dissimilar units.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
OC-2	Authorize the hiring of Entergy personnel and/or contractor positions identified as immediate staffing requirements by the ANO People Health Committee (APHC) during organizational capacity assessment reviews.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
OC-3	Establish and implement an ANO Integrated Strategic Workforce Plan that provides a strategic long-term perspective of future staffing needs with a focus on ensuring staffing is sufficient to support nuclear safety. The workforce planning process will look into the future at least five-years, be updated annually, and reviewed quarterly by the ANO People Health Committee.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
OC-4	Establish and implement an ANO People Health Committee to place priority on staffing and retention issues that are impacting ANO employees or could impact nuclear safety.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PM-13	Perform a resource allocation study of the Preventive Maintenance (PM) Program that identifies positions needed to maintain a continuously improving PM Program.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
PM-14	Address gaps in the Preventive Maintenance Program baseline staffing level based on the current levels of experience in the departments and at the site.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
PM-19	Revise the Preventive Maintenance (PM) procedure to require that craft work order feedback is monitored and incorporated within 90 days or model work order placed into “plan” status.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PQ-1	Develop and implement a site procedure writer’s guide based on applicable industry standards.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PQ-2	Develop and implement a work order instruction guide based on applicable industry standards.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PQ-3	Perform scoping reviews to assess extent of procedure and work instruction quality issues.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
PQ-4	Conduct a Procedure Professionals Association certification course for selected plant personnel.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Discussed, awaiting licensee action
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PQ-5	Risk rank station procedures as safety significant, important, or normal to facilitate procedure upgrade project scoping.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
PQ-6	Upgrade “safety significant” procedures.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
PQ-7	Upgrade procedures classified as “important.”	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
PQ-8	Upgrade procedures classified as "normal."	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
PQ-9	Upgrade Critical 1-4 Model Work Orders with a frequency of greater than or equal to 2 years or 2 refueling outages.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
PQ-10	Review and correct station procedures with respect to gaps in use of notes and cautions, and ensure needed corrections are entered into the appropriate station processes for completion.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
PQ-11	Establish a periodic review and validation of station procedures. This will also support a systematic approach to revising the station procedures not included in other actions to the standards contained in the new writers' guide.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

Equipment Reliability and Engineering Programs

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
DB-10	Resolve standards performance deficiencies from the engineering program assessments completed during the Preventive Maintenance (PM) Program extent of condition review.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DB-11	Perform one benchmark or one self-assessment between March 1, 2016, and March 1, 2020, for each of 24 engineering programs.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Discussed, awaiting licensee action
		4/2/18 – 5/31/18	05000313/2018013, 05000368/2018013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
DB-12	Training and industry exposure will be used to build the knowledge, proficiency and standards within the program and component areas as the owners of each program listed in DB-11 will participate in at least one industry meeting or specialized training course focused in their program area between March 1, 2016 and March 1, 2020.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
DM-18	Develop and implement work management training for senior managers, managers, and each of the identified work management positions with respect to their roles and responsibilities.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
DM-20	Develop and implement a supply vs. demand model and metrics to determine and monitor resource needs to meet workload demand. The metrics will be used to measure resource demand and supply so that scheduled work has the correct resources assigned to complete the work scope.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Discussed, awaiting licensee action
		2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
PH-1	For open Site Integrated Plant Database (SIPD) items, ensure management sponsors and project managers are assigned to verify database content is updated. This action supports effective decision making by ensuring the accuracy and completeness of existing SIPD records.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
PH-2	Perform a review of the Site Integrated Plant Database (SIPD) database from 2007 to present to identify PM or equipment reliability projects related to critical equipment that have been cancelled without mitigation strategies.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
PH-3	Review and update the current Aging/Obsolescence List, Critical Spares List, and Equipment Reliability Issues List to identify items that should be included in the 2017 and 2018 business cycles.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PH-4	Review and update the current site Unit Commitment List to identify operations and maintenance and capital projects which are required to be resolved by completion of refueling outages 1R27 and 2R26.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PH-5	Develop and implement a comprehensive site plan for equipment reliability that identifies the implementing resources (people, materials, funding, and time) needed to support on-line and outage Unit Commitment List items that require resolution by completion of 1R27 and 2R26.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PH-6	Obtain an independent third party review of the selection of Site Integrated Planning Database (SIPD) items that are targeted on the comprehensive site plan for equipment reliability to ensure the decisions for inclusion and exclusion are aligned with industry standards and expectations associated with timely resolution of degraded equipment and design margins.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
PH-10	Develop educational materials for the plant health process including SIPD processing. Include a detailed flowchart, workbook, and detailed presentation materials. Deliver the presentation to system, component, and program engineers and to selected supervisory personnel. Have the workbook completed by personnel following the presentation.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
PH-11	Develop a job familiarization guide for Plant Health Working Group and Plant Health Committee members and alternates. Have all members and alternates complete the guide.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PH-12	The following list contains equipment reliability issues in systems or components necessary for the safe and reliable operation of the unit(s) that will be resolved over the next two unit operating cycles. The intent of this action is to demonstrate improved equipment reliability by resolving long-standing equipment issues.	8/25/17 – 9/1/17	05000313/2017012, 05000368/2017012	Additional information added
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Additional information added
		4/2/18 – 5/31/18	05000313/2018013, 05000368/2018013	Closed
PH-13	The following list contains equipment reliability issues that are being evaluated by the Plant Health Committee for resolution commensurate with the potential impact on safe and reliable operation of the units by December 20, 2018. For items not resolved by the due date, the Plant Health Committee will provide the safety basis for the extension.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Additional information added
		4/2/18 – 5/31/18	05000313/2018013, 05000368/2018013	Closed
PH-14	Review and update the current site Unit Commitment List to identify operations and maintenance and capital projects which are required to be resolved by completion of refueling outages 1R27 and 2R26.	4/2/18 – 5/31/18	05000313/2018013, 05000368/2018013	Closed
PM-1	Create a site specific procedure for component classification that will ensure appropriate classification of equipment for PM based upon risk and safety.	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Closed
PM-2	Create a site-specific PM program procedure that includes lessons learned from the PM FPA root cause related to critical input to PM changes.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
PM-4	Transfer responsibility for PM evaluations of all maintenance rule components and critical system redundancy components to engineering to ensure that appropriate expertise is brought to bear on these evaluations.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PM-5	The Preventive Maintenance (PM) Oversight Group will review all PM change requests for a minimum of 12 months and initiate corrective action for any that do not meet management standards for quality.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
PM-7	The Planning Quality Review Team will perform an enhanced review of critical work orders for a minimum of 12 months and feedback the results to the planning staff.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
PM-11	Implement a new qualification card for maintenance personnel who perform PM evaluations.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
PM-12	Implement training for all personnel who are qualified to establish Preventive Maintenance (PM) requirements.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
PM-15	Review a sample of component criticality classifications to validate that the station's risk significant equipment is classified correctly.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
PM-18	Develop mitigation strategies to address cancelled projects in the Site Integrated Planning Database (SIPD) including embedded sub component projects.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed

Safety Culture

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
CO-1	Revise procedure EN-FAP-OM-011, "Corporate Oversight Model," to include station nuclear safety culture output from the Nuclear Safety Culture Monitoring Panel (NSCMP) as inputs to the Oversight Analysis Meeting and Oversight Review Board.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
CO-4	Revise procedures that govern Nuclear Oversight Performance Assessments to include NSC trend codes. Apply relevant safety culture trend code(s) during the trending process. Based on report frequency, roll up codes to provide a perspective on NSC and include in established reporting process.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
DM-2	Establish a decision making nuclear safety culture observation form to include the top leader behaviors to be demonstrated and reinforced at ANO meetings. The form should include decision making practices that emphasize prudent choices over those that are simply allowable.	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Closed
DM-3	Establish decision making and risk management content in the ANO Employee Handbook to include behaviors for making effective decisions and appropriately managing risk with the expectation for employees and leaders to use the book in communicating, demonstrating, and reinforcing appropriate behaviors.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
LF-5 *SII*	Provide supervisory training on nuclear safety culture (NSC) and safety conscious work environment.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed
NF-4	Develop content for the NSC observation process that addresses procedure use and adherence.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
PM-20	Track Leadership Fundamentals RCE CR-ANO-C-2015-02829 CA-022. Improve the performance review process for leadership fundamentals supportive of long term strategic improvement.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Discussed, awaiting licensee action
		11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
SC-2	Revise procedure EN-QV-136, “Nuclear Safety Culture Monitoring,” to define the roles and responsibilities of the ANO NSC Manager.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
SC-3	Revise procedure EN-QV-136, “Nuclear Safety Culture Monitoring,” to add NSC monitor orientation training for Nuclear Safety Culture Monitoring Panel (NSCMP) and Safety Culture Leadership Team members.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
SC-4	Conduct a structured off-site meeting among the ANO Senior Leadership Team to align on what a strategic commitment to safety looks like at ANO and the leader behaviors that will demonstrate that commitment.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
SC-5	Create an ANO Employee Handbook that includes nuclear safety culture, safety conscious work environment, and corrective action program (CAP) standards and expectations, and provide orientation and expectations to ANO personnel on the contents and use of this handbook as a daily tool for communicating, reinforcing, and demonstrating NSC and CAP expectations.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed
SC-6	Conduct meetings facilitated by members of site management to familiarize personnel with the contents of the ANO Employee Handbook and expectations for its use.	11/27/17 – 12/1/17	05000313/2017013, 05000368/2017013	Closed

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
SC-7	Establish a small group meeting schedule to facilitate face-to-face interaction between ANO senior leadership and station employees. This activity should span a minimum period through the end of 2016 and include the following attributes: 1) purpose is open dialogue on safety performance with emphasis on employee questions and feedback; and 2) schedule should be coordinated to facilitate broad exposure, with emphasis on workers on shift rotation who can't routinely participate in other communication forums.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
SC-9 NF-7	Develop and provide training to ANO leaders, including supervisory training on nuclear safety culture and safety conscious work environment, constructive conversation skills, and how to foster a strong nuclear safety culture within their organizations.	2/12/18 – 2/16/18	05000313/2018012, 05000368/2018012	Closed
SC-10 NF-8	Develop and present training to ANO workforce to include case studies that illustrate the “right picture” of nuclear safety culture. Include what it means to be an engaged and thinking individual nuclear worker.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
SC-11	Implement priority group specific action plans to address safety culture issues.	8/28/17 – 9/1/17	05000313/2017012, 05000368/2017012	Closed
SC-14 LF-9 CA-2	Establish and implement a Nuclear Safety Culture Observations process including elements of leader behaviors, nuclear safety	8/29/16 – 9/16/16	05000313/2016010, 05000368/2016010	Discussed, awaiting licensee action

Area Action Plan	Description	Inspection Dates	Inspection Report Number	Status
	culture, and safety conscious work environment. The observer monitors leader performance on a daily basis and provides feedback to correct adverse trends in behaviors.	2/27/17 – 3/3/17	05000313/2017010, 05000368/2017010	Closed
SC-15	Raise the priority and visibility of nuclear safety culture (NSC) at the fleet level by revising the Corporate Oversight Model to include station NSC output from the Nuclear Safety Culture Monitoring Panel (NSCMP) as input to fleet oversight analysis meetings and oversight review boards.	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

Service Water System Self-Assessment

Description	Inspection Dates	Inspection Report Number	Status
Service Water System Operational Performance Inspection	10/31/16 – 12/2/16	05000313/2016008, 05000368/2016008	Discussed
	5/22/17 – 5/26/17	05000313/2017011, 05000368/2017011	Closed

ARKANSAS NUCLEAR ONE – NRC CONFIRMATORY ACTION LETTER (EA-16-124)
 FOLLOW-UP INSPECTION REPORT 05000313/2018013 AND 05000368/2018013 AND
 ASSESSMENT FOLLOW-UP LETTER – DATED JUNE 18, 2018

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