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Mr. Kriss Kennedy
Regional Administrator
U. S. Nuclear Regulatory Commission, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

SUBJECT: Notification of Confirmatory Action Letter Focus Area Inspection Readiness
Arkansas Nuclear One – Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6

REFERENCES:

1. Entergy Letter to NRC, ANO Comprehensive Recovery Plan, dated May 17, 2016 (OCAN051602) (ML16139A059)
2. NRC Letter to Entergy, NRC Supplemental Inspection Report 05000313/2016007 and 05000368/2016007, dated June 9, 2016 (OCNA061602) (ML16161B279)
3. NRC Letter to Entergy, Confirmatory Action Letter, dated June 17, 2016 (OCNA061604) (ML16169A193)
4. NRC Letter to Entergy, NRC Problem Identification and Resolution Inspection Report 05000313/2017015 and 05000368/2017015, dated January 9, 2018 (OCNA011804) (ML18009A878)
5. Entergy Letter to NRC, Notification of Confirmatory Action Letter Focus Area Inspection Readiness, dated February 6, 2018 (OCAN021801) (ML18040A918)

Dear Mr. Kennedy:

On May 17, 2016, Entergy Operations, Inc. (Entergy) transmitted a Comprehensive Recovery Plan (CRP) to address the issues that led to the decline in performance at Arkansas Nuclear One (ANO), Units 1 and 2 (Reference 1). The CRP, comprised of 14 Area Action Plans, was based upon a thorough evaluation of related weaknesses, causes, and associated safety culture aspects, as well as insights gained from the NRC 95003 Inspection (Reference 2). The CRP included measures to ensure rigorous implementation and close monitoring of effectiveness and also contained elements designed to achieve sustainable improvement over the long term.

On June 17, 2016, NRC issued a Confirmatory Action Letter (CAL) for ANO (Reference 3). The CAL identified 161 of the 200 total CRP actions needed to resolve the problems identified within the following six inspection focus areas:

1. Significant Performance Deficiencies (SPD)
2. Identification, Assessment, and Correction of Performance Deficiencies (IACPD)
3. Human Performance
4. Equipment Reliability and Engineering Programs
5. Safety Culture
6. Service Water System Self-Assessment

As outlined in Reference 3, the CAL remains in effect until Entergy notifies the NRC that the CRP actions are complete, and NRC follow-up inspections are likewise completed.

In the third quarter of 2016, the NRC began quarterly inspections to review actions in the CAL that were determined by ANO leadership to be complete and effective in achieving the stated performance improvements. Based on the results of the quarterly inspections completed to date, the NRC closed 157 of 161 actions as complete and effective. Focus areas of SPD and IACPD were also recommended for closure during the recent NRC Inspection conducted the week of February 12, 2018. Of the remaining four actions, three involve equipment upgrades and are scheduled to be completed in April 2018; the fourth action involves availability of original design records for high and medium energy line break pipe whip and jet impingement.

The purpose of this correspondence is to notify the NRC of Entergy's readiness for NRC inspection of the remaining CAL actions and inspection focus areas. With the exception of three actions related to equipment upgrades, Entergy has successfully completed and determined to be effective the actions outlined in Reference 3 for the remaining areas of Human Performance, Equipment Reliability and Engineering Programs, Safety Culture, and Service Water System Self-Assessment. The actions have been reviewed by Action Closure Review Boards to confirm that the steps implemented met the intent and purpose of the associated actions. Metrics and/or other effectiveness measures have been used to verify that the actions have achieved intended results. Effectiveness Review Challenge Boards, comprised of senior station leaders, Entergy fleet representatives, and external representatives, have also determined that intended results have been achieved and are sustainable.

In addition, an overall effectiveness review was conducted by an independent team of Entergy fleet and external representatives to determine whether the actions taken have been effective to ensure sustained performance improvement. The emphasis of the assessment was on the inspection focus areas identified by the NRC which encompass the 14 Area Action Plans developed by the site.

Overall, the assessment verified performance was improved and improvement goals were met for the Area Action Plans. Further, the assessment confirmed the actions are sufficient to ensure improvements are sustainable. This assessment in conjunction with the site's Closure Readiness Evaluations also verified performance gaps identified in the 95003 inspection were resolved and the remaining focus areas are ready for inspection.

Summary of Performance Improvements

Human Performance

In the focus area of Human Performance, actions to improve safety performance were grouped in four themes, including leadership field presence and the reinforcement of standards, procedure adherence and questioning attitude, eliminating tolerance for degraded conditions, and procedure and work instruction quality.

The Human Performance Focus Area has demonstrated positive improvements and is effective based on achievement of Desired Behaviors and Outcomes (DBOs). CRP metrics indicate improved and sustained performance in leadership field presence and reinforcement of standards. To improve leader behaviors, leadership assessments were conducted for the senior lead team, managers, and superintendents and individual improvement plans were developed. This action was expanded beyond the scope of the CAL to also include first line supervisors. In addition, offsite leadership retreats, training, and weekly leadership and alignment meetings further improved leadership skills. The station is using a paired observation program as a learning tool in achieving desired leader behaviors. Lastly, performance management processes are being used to monitor individual and organizational performance to ensure alignment within the leadership team and reinforcement of the station's vision, values, and behaviors.

Sustained improvement in consequential error rate is indicative of individuals applying fundamental error prevention behaviors, such as procedure use and adherence, questioning attitude, and stopping evolutions when unsure. Standards for performance have been raised through external mentoring in Operations and Engineering, improvements in operational focus, decision making, and defining and enforcing standards. Standards have further been reinforced through High Impact Training for Operations and "out-of-the-box" evaluations for supplemental supervision and Maintenance.

To improve procedure and work instruction quality and reduce errors and rework, a standard writer's guide was developed to incorporate the human factoring requirements of a recognized industry standard. Procedure and work order writers were trained and certified to these new standards to improve their procedure writing abilities. Actions have been taken to upgrade station procedures and work instructions to defined standards. In addition, work order instructions are now being provided in a timelier manner to allow sufficient time to prepare and provide feedback on level of detail and scope prior to performing work.

Sustainability of improved leadership and human performance is supported by the fleet's Nuclear Strategic Plan (NSP) and associated Nuclear Excellence Model. The Entergy fleet instituted the NSP in 2017. The Plan is a six-year commitment to achieving excellence in three strategic focus areas, one of which is the area of "People" which includes "Be Professional". The "Be Professional" focus area facilitates long-term improvements in a well-defined and implemented organization structure, coupled with highly proficient and engaged nuclear professionals, which support sustainable, safe, and reliable plant operations. Additionally, an "Engagement Model" tool was implemented as part of NSP supporting the core value of "Teamwork", this model defines leadership behaviors supporting engagement such as clear and concise expectations, frequent feedback, and positive reinforcement.

Equipment Reliability and Engineering Programs

For the focus area of Equipment Reliability and Engineering Programs, actions to improve safety performance were grouped in four themes including improving staffing levels, increasing levels of experience and qualifications, improving scope and frequency of Preventative Maintenance (PM) to ensure reliable plant operation, and funding and completing equipment upgrades. The Equipment Reliability and Engineering Programs Focus Area have demonstrated positive improvements and are effective based on achievement of DBOs.

Baseline staffing has been adjusted through actions of the CRP, as complemented by the fleet's Nuclear Strategic Plan. Based on workforce experience, training needs, knowledge management needs, projected attrition, and workload, appropriate levels of staffing for safe and reliable operation of ANO were determined. A staffing plan was developed in response to staffing studies which included baseline organizational changes and staffing needs to support improvement efforts. In addition, Entergy has established through the People Health Committee and the Integrated Strategic Workforce Plan a sustainable process at ANO to ensure resource adequacy in numbers and technical expertise to execute work activities. These adjustments have strengthened functions supporting equipment reliability, lowered work backlog, reduced overtime and resulted in improvement in the station's capability to perform maintenance and technical support activities. Actions have strengthened knowledge and proficiency of personnel who support equipment reliability through Engineering, PM, Plant Health, and Work Management programs and processes.

Improvements in Engineering Programs have been achieved through focused assessments, benchmarking, mentoring, training, and engaged oversight. Engineering Programs have incorporated industry best practices to ensure Programs are code compliant and that they proactively assess the health of their function, communicate and resolve deviations, and build sustained performance.

ANO upgraded equipment criticality classifications to the current industry standard, elevating the classification of components that contribute to plant risk. The PM change process was improved, a Component Maintenance Optimization group was created, and a "living PM program" was created to continuously evaluate and adjust the technical bases for preventive maintenance. Work instruction quality has improved through upgraded standards for procedures and work instruction, feedback from the Planning Quality Review Team, and attention to craft feedback.

Improvements to the Plant Health process have shifted focus to eliminating degrading conditions, restoring design margins, and ensuring long-term equipment reliability. The process for identifying, approving, and funding equipment upgrades has been streamlined and project backlogs reduced. Through actions of the CRP, as complemented by the NSP, substantial equipment upgrades and improved long-range plans have been achieved.

In aggregate, actions taken have led to a shift in mindset where lasting physical improvements are pursued in contrast to analytical or compensatory actions that often are not the best response to an equipment problem. Noteworthy accomplishments in Equipment reliability and reduced station risk include reduction in fire impairments, lowered maintenance backlogs, and improvements in the Operations Aggregate Index.

Safety Culture

Actions to improve nuclear safety culture at ANO were grouped into five themes related to staffing and change management, training and development, leader behaviors, individual commitment to safety, and constant examination of nuclear safety culture. The Safety Culture Focus Area has demonstrated positive improvements and is effective based on achievement of DBOs.

Comprehensive staffing studies have been completed to align ANO and fleet staffing with current and projected activity levels. Baseline staffing has been increased through actions of the CRP, supported by the fleet's NSP. As discussed above, based on workforce experience, training needs, knowledge management needs, projected attrition, and workload, appropriate levels of staffing for safe and reliable operation of ANO were determined. A staffing plan was developed in response to staffing studies which included baseline organizational changes and staffing needs to support improvement efforts. Entergy implemented a Supply vs. Demand resource model and metrics for work management at ANO to evaluate and monitor resources to meet work load demand. The metrics are used to measure resource demand and supply so that scheduled work has the correct resources assigned to complete the work scope. In addition, Entergy has established the ANO People Health Committee and the Integrated Strategic Workforce Plan as a sustainable process to proactively ensure resource adequacy in numbers and technical expertise to execute work activities. Based on the benefits of the People Health Committee, this process has been adopted by the Entergy fleet.

Leadership skills for supervisors and above have been improved through training and development. This included developing the skills to build trust within the organization and tools to have constructive conversations needed to correct behaviors and raise performance standards. Additionally, technical worker fundamental capabilities have been improved and have been factored into training programs, Operations has applied High Impact Training to strengthen fundamentals, Nuclear Safety Culture and Safety Conscious Work Environment training has been given to both leaders and workers, and the site has been trained on the Nuclear Excellence Model and the tools to support common values and principles.

Trust has been strengthened with the workforce by leadership support for permanent solutions to equipment problems and leaders' response to emergent conditions. Employee and family events have been used to show appreciation and build teamwork. Trust and employee engagement have been further reinforced through an Employee Communications Advisory Team, monthly all-hands meetings and a First-Line Leadership Council. Trust has also been strengthened in the relationship between site management and the unions representing station employees. A combined effort by the union and ANO management has supported engagement and professionalism through the International Brotherhood of Electrical Workers' Code of Excellence.

The consequential error rate performance indicator has met goal for several consecutive months with a positive trend. This reflects improved ownership and adherence to standards. A "Connection to the Core" campaign is reinforcing nuclear safety as the overriding priority by asking each individual to think about how their work impacts nuclear safety, take personal accountability for actions, stop if plant conditions change, and inform leadership of changing conditions and concerns.

The oversight structure for Nuclear Safety Culture has been strengthened to monitor behaviors, competencies, processes, and metrics. An external Subject Matter Expert was retained to mentor fleet Nuclear Safety Culture Monitoring Panels and Safety Culture Leadership Teams, and a new permanent fleet NSC Program Manager has been established. Nuclear Safety Culture Monitors are assigned for key meetings to evaluate behaviors and provide prompt feedback that is used to change behaviors and communication styles, as well as to ensure the proper focus on positive safety culture standards.

Along with the People Health Committee, the Integrated Strategic Workforce Plan, and the "Connection to the Core" campaign, sustainability of improved safety culture is supported by the fleet's NSP and associated Nuclear Excellence Model. The "Be Professional" focus area facilitates long-term improvement in safety culture, capacity, proficiency, and organizational effectiveness.

Service Water System Self-Assessment

In the focus area of Service Water System Self-Assessment, the 95003 identified that Entergy failed to adequately identify, monitor, and correct multiple degraded conditions with the safety-related service water system. As a result, Entergy conducted a focused self-assessment of ANO Units 1 and 2 service water systems in accordance with station procedures and NRC Inspection Procedure 93810, "Service Water System Operational Performance Inspection." The assessment utilized a multi-discipline team consisting of outside experts in design analysis, operations, and engineering and ANO personnel specializing in Service Water systems and Operations. The detailed review of mechanical components, plant structures, and electrical power supplies and controls verified that the ANO Service Water system configuration meets licensing and design basis requirements.

Issues identified were documented in the corrective action program and assessed for operability, significance, reportability, and actual or potential consequence. No significant issues that would immediately challenge the design or licensing basis of the service water system or systems that service water supports were identified. However, the Microbiologically Influenced Corrosion (MIC) Program was identified as a focus area. Improvements to the MIC program include incorporation of newer non-destructive examination technologies which have not yet been utilized at ANO but are industry proven, updates to ANO's piping stress calculations which allow ANO to remain in a proactive state, implementation of a focused pipe replacement strategy for both of the ANO units, and creation of a living risk model which incorporates risk and consequence and ranks piping segments for each unit.

This focused self-assessment evaluated the Service Water System operational controls, maintenance, surveillance, and other testing, as well as personnel training to ensure the Service Water System is operated and maintained so as to perform its safety-related functions. This assessment ensured that documentation, PMs, tests, condition monitoring, and planned piping replacements are in place to support the long-term health of the service water system and created actions to ensure continued success for continued operation.

This assessment provided a comprehensive picture of the health of this safety-significant system, and permitted ANO to develop a comprehensive project plan to address the challenges. One key finding was the need to acquire the latest technology to measure and monitor corrosion to defend the design margins on system components, as well as the need to upgrade the station's capability to consistently apply corrosion protection chemicals.

Conclusion

In conclusion, Entergy has determined that committed actions have been completed and have been effective in addressing performance issues in the remaining focus areas of Human Performance, Equipment Reliability and Engineering Programs, Safety Culture, and Service Water System Self-Assessment. ANO is shifting improvement efforts toward achieving industry best practices to maintain a culture of continuous improvement. Entergy requests that the NRC inspect the remaining focus areas to support closure of ANO's CAL.

This letter contains no new regulatory commitments. Should you have any questions or require additional information, please contact Stephenie Pyle at 479-858-4704.

Sincerely,

ORIGINAL SIGNED BY RICHARD L ANDERSON

RLA/nbm

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