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1CAN011405

January 30, 2014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Notification of Revised License Renewal Commitments
Arkansas Nuclear One – Unit 1
Docket No. 50-313
License No. DPR-51

REFERENCE: NRC letter to Entergy, *Issuance of Renewed Facility Operating License, No. DPR-51*, dated June 20, 2001 (1CNA060101) (ML011720024)

Dear Sir or Madam:

The purpose of this letter is to inform the NRC that Entergy Operations, Inc. is revising several commitments related to the above reference for Arkansas Nuclear One, Unit 1 (ANO-1). The revised commitments are provided in Attachment 1.

This letter contains revised regulatory commitments, which are identified in Attachment 2. Should you have any questions concerning this submittal, please contact me.

Sincerely,

Original signed by Stephenie L. Pyle

SLP/nbm

Attachments: 1. ANO-1 Revised License Renewal Commitments
2. List of Regulatory Commitments

cc: Mr. Marc L. Dapas
Regional Administrator
U. S. Nuclear Regulatory Commission, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

U. S. Nuclear Regulatory Commission
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U. S. Nuclear Regulatory Commission
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Attachment 1 to

1CAN011405

Arkansas Nuclear One, Unit 1 (ANO-1) Revised License Renewal Commitments

ANO-1 Revised License Renewal Commitments

Commitment 17828 - Instrument Air Quality Program (ANO-1 License Renewal Application (LRA), 1CAN010003, dated January 31, 2000, Appendix B, Section 4.11) references Instrument Society of America (ISA) Quality Standard S7.3-1975, for guidance on acceptance criteria for instrument air is being revised to reference Quality Standard for Instrument Air ANSI/ISA-S7.0.01-1996.

Justification: The Instrument Air Quality Program ensures that the instrument air supplied to components is maintained free of water and significant contaminants. When the NRC issued Generic Letter (GL) 88-14, ISA S7.3-1975 (R1981) was the industry standard for instrument air quality. Subsequently, ISA revised the standard and issued ANSI/ISA-S7.0.01-1996 which superseded S7.3-1975. Based on industry practices and particle size testing capabilities, the 1996 standard has since been adopted consistent with NRC guidance in NUREG-1801 XI.M24, Generic Aging Lessons Learned (GALL) Report, compressed air monitoring aging management program.

Of the four aspects of air quality (dew point, particle size, lubricant content, and contaminants), particle size is the only significant difference between the two standards. The 1975 standard states maximum particle size is 3.0 microns. The 1996 standard was revised to specifies a maximum size of 40 microns is acceptable for most devices. Loss of material and cracking are the aging affects managed by the Instrument Air Quality Program. Clean dry compressed air does not promote corrosion mechanisms that would lead to these effects with the materials used in the instrument air system. Moisture, oil, or other hazardous contaminants are the primary aspects of air quality that can be controlled to prevent corrosion mechanisms. The criteria and recommendations for these three aspects are unchanged between the two standards.

The 1996 standard 40 micron limit, or manufacturer limit where specified smaller, is sufficient to ensure entrained particles are limited and other potential aging effects precluded. The primary air quality concern with entrained particle size (from the perspective of the ISA standard) is equipment malfunction due to clogging/eroding of orifices, internal passageways, filters, or regulators. Adopting the ANSI/ISA-S7.0.01-1996 Quality Standard for Instrument Air has no adverse effect on the Instrument Air Quality Program, management of specified aging effects, or the quality of air provided to end-use components.

Commitment 17830 - Flow rate monitoring of the makeup pump room coolers VUC-7A, VUC-7B, VUC-7C (ANO-1 LRA, Appendix B, Section 4.19, Service Water Integrity Program) is being revised to remove the air flow testing portion of the flow rate monitoring commitment as discussed in GL 89-13 correspondence 0CAN109205 and adopted in the ANO-1 LRA; service water flow rate through the room coolers continues to be monitored.

Justification: Heat exchanger testing requirements were described in correspondence 0CAN109205, dated October 30, 1992, as follows: As an alternate to the heat transfer or thermal effectiveness testing, air and water flow rate trending and visual inspections of accessible areas of the air and water sides of the heat exchanger is prescribed. The cooling water and air flow rates are verified to be within design requirements for the

condition measurement. This method of flow rate monitoring is utilized for air-to-water heat exchanger capability monitoring trends. Flow rate monitoring is the GL 89-13 method committed to for ANO-1. The heat exchangers/coolers subject to this testing are listed in 0CAN109205 which includes the makeup pump room coolers VUC-7A, VUC-7B, and VUC-7C.

It has been determined by an ANO calculation that: "No equipment important to safety relies on the function of these room coolers. The passive function related to service water system integrity is still required and assumed, and flow to the pump coolers is still achieved by flow balance which can now be accomplished with more flexibility. Any lack of flow through the room coolers or fan or filter failure produces no new issues regarding spatial interaction with equipment important to safety." This calculation assures high pressure injection pump operability with no room cooling.

As a result the only function required to be managed for license renewal is the service water pressure boundary function which continues to be managed by the Service Water Integrity Program. Air flow testing is no longer required as an aging management activity.

Commitment 17836 - Emergency Feedwater Pump Testing Program (ANO-1 LRA, Appendix B, Section 4.21.6) frequency of once per 31 days is being revised to quarterly.

Justification: A test frequency of once per 31 days was specified in the ANO-1 LRA for the emergency feedwater pump testing program. In the conversion to Improved Technical Specifications, the test frequency for the emergency feedwater pump testing program changed from once per 31 days to every quarter per ANO-1 License Amendment 215. Quarterly inservice testing per the American Society of Mechanical Engineers (ASME) Operations and Maintenance Code confirms the pressure boundary and heat transfer functions of system components is maintained, and aging effects are managed.

Commitment 17847 - Volumetric radiographic testing (RT) examination of the reactor building sump Penetration 68 (P-68) piping valves CV-4400 and CV-4446 (ANO-1 LRA, Appendix B, Section 4.3.7, Modify and Maintain Augmented Inspection Program) is being revised to perform ultrasonic testing (UT) examination instead.

Justification: Components associated with P-68 have been identified to include valves CV-4400 and CV-4446 and radiography was selected. The piping, penetration P-68 fluted head, and CV-4400/CV-4446 valve bodies are stainless steel. Further review of the P-68 requirements for the penetration and components and the aging effect of loss of material and cracking determined a more appropriate examination process and the specific “component” to be examined, i.e., the valve itself or the piping and or weld(s) to the valve. RT of the valves CV-4400 and CV-4446 could give some indication of wall loss and internal configuration, but would not be effective to detect cracking unless it was gross in size. The attached pipe is much thinner than the valve and the aging effects of corrosion and cracking would be manifested earlier in the thinner piping. Therefore, RT of CV-4400 and CV-4446 has been changed to a UT examination performed on the welds to the valves instead.

Commitment 17848 - New Pressurizer Examinations Program (ANO-1 LRA Appendix B, Section 3.4) for the pressurizer heater bundle penetration weld examination (from sub-Section 3.4.2) is being revised to credit an Alloy 600 heater bundle inspection performed at Three Mile Island (TMI)-1 in 2003 to satisfy the commitment.

Justification: The Pressurizer Examinations Program includes the pressurizer heater bundle penetration weld examination which consists of the following requirements:

- A one-time inspection is to be performed at ANO-1 or Oconee Nuclear Station (ONS) that may occur prior to or during the period of extended operation (PEO). Note that inspection of an Alloy 600 heater bundle at ONS-1 bounds ANO-1 since the ONS-1 penetration welds are fabricated from Alloy 82/182 and therefore, are more susceptible to primary water stress corrosion cracking (PWSCC). The ONS-2, ONS-3, and ANO-1 stainless steel heater bundle designs are identical.

- The inspection includes surface examination of sixteen peripheral heater sheath-to-diaphragm plate penetration welds and Visual Test (VT)-3 or equivalent visual examination of the remaining heater sheath-to-diaphragm plate penetration welds on the first heater bundle removed for replacement.

The Pressurizer Examinations Program manages the aging effects of cracking of pressurizer cladding and attachments to the cladding which may result in cracking or loss of underlying ferritic steel base metal and cracking of the structural welds that connect the heater sheaths to the diaphragm plates. AREVA performed examinations on a TMI-1 heater bundle in 2003. Penetration Test (PT) examinations were performed on nineteen peripheral diaphragm plate-to-heater sleeve and heater sleeve-to-heater sheath J-groove welds. The remaining twenty diaphragm plate-to-heater sleeve and heater sleeve-to-heater sheath J-groove welds located on the inside rows of the diaphragm plate were VT-3 visually examined. No recordable PT or VT-3 indications or evidence of PWSCC was found in the diaphragm plate-to-heater sleeve and heater sleeve-to-heater sheath J-groove welds.

The TMI-1 Alloy 600 pressurizer heater bundle penetration weld inspection is being credited to satisfy the ANO-1 commitment. The Alloy 600 heater bundle at TMI-1 is identical to ONS-1 and therefore also bounds ANO-1. The above inspections performed by AREVA meet all the inspection requirements of the ANO-1 commitment. As a result the inspection performed at TMI-1 bounds the required ANO-1 inspection.

Commitment 17853 - ANO-1 LRA, Appendix B, Section 4.9, Flow-Accelerated Corrosion (FAC) Prevention, Acceptance Criteria states that any measured wall thickness below, or projected to be below 70% of nominal wall at the next refueling outage is evaluated to determine if additional areas need to be examined. The acceptance criteria of measured wall thickness below or projected to be below 70% of nominal wall at the next refueling outage is being revised to a 87.5% for initial screening criteria for component evaluation.

Justification: A of nominal thickness of 87.5% is the screening criteria for component evaluations. When a component is found below 87.5% of nominal thickness a sample

expansion evaluation is performed in accordance with industry standards. This is acceptable because 87.5% of nominal thickness is more conservative and is intended to detect significant or unexpected wear in a timely manner. This is an enhancement to the program to manage the effects of aging.

Commitment 17853 - ANO-1 LRA, Appendix B, Section 4.9, FAC Prevention Method, states that the current CHECWORKS database tracks safety and non-safety related large bore components in the main steam, main feedwater, condensate, reheat steam, extraction steam, and heater vents and drains systems. This commitment is being revised to reflect that the main steam lines are not tracked in the CHECWORKS database.

Justification: Per the FAC susceptibility evaluation, the lines transporting superheated steam with no moisture content are classified as non-susceptible. Based on this exclusion, the large bore main steam lines are not tracked in the CHECWORKS database. Main steam is generally not susceptible to FAC, but should be inspected at a minimum number of locations to assure no moisture is present and FAC damage is not occurring. The component has an inspection interval in accordance with the FAC Program and ensures aging effects continue to be effectively managed.

Commitment 17856 - Control room Halon fire system inspection program (ANO-1 LRA, Appendix B, Section 4.8.6) is being revised to change the frequency of visual inspections and Marinite board/acoustical tile inspections from a semi-annual to an annual frequency.

Justification: The ANO-1 Halon fire system inspection requires the discharge nozzles to be checked for cleanliness and obstruction, verification of the nozzle position/alignment, and the discharge header piping supports/straps to be checked. A visual inspection of the Marinite board and acoustical tile is also performed. In order to access these areas to perform these inspections plant personnel are required to enter the ANO-1 control room false ceiling by climbing near plant equipment and trip-sensitive panels. NFPA 12A, 1973 Edition, Section 1700 (Inspection, Maintenance, and Instructions) discusses requirements for periodic inspection and testing of Halon systems. It states "At least annually, systems shall be thoroughly inspected and tested for proper operation by competent personnel." Requirements to inspect the nozzles and piping above the false ceiling remains unchanged, but the frequency of inspection is being changed from semi-annual to annual in order to minimize the number of times that the false ceiling must be accessed. This is consistent with NUREG-1801 Section XI.M26 and continues to meet National Fire Protection Association (NFPA) and site fire protection program requirements and effectively manages aging effects on these components.

Commitment 17861 - Fire suppression sprinkler deluge spray system quarterly flush (ANO-1 LRA, Appendix B, Section 4.8.4) is being revised to reflect the NFPA guidance of an annual flush of fire suppression sprinkler deluge spray system.

Justification: The purpose of the flush is to verify there is no change in the condition of the water supply piping and control valves per NFPA 25, 2008 Edition,

Section 10.3.7.1.1. NFPA 25 only requires this test to be performed annually based on Section 13.3.3.4. Substantial operating experience over the life of the plant has not shown a need to deviate from the NFPA 25 recommendation for annual testing used to identify internal blockage or mis-positioned valves. Flushing the firewater system more frequently can have an adverse impact on the long-term system health by introducing fresh water which promotes accelerated pipe degradation. This is consistent with NUREG-1801 XI.M27 and continues to meet NFPA and site fire protection program requirements and effectively detects aging effects on these components.

Commitment 17865 - ANO-1 LRA, Appendix B, Section 4.14, Oil Analysis, states that components that do not have regular oil changes, viscosity and neutralization number are determined to verify the oil is suitable for continued use. Subsequent to ANO-1 LRA submittal, it was determined that the Neutralization Number (Total Acid Number (TAN)) determination was no longer required to determine oil condition, and therefore TAN is no longer used at ANO as an 'oil suitability for continued use' determination component.

Justification: The majority of components in the scope of this program receives regularly scheduled oil changes and are not affected by this change. Routine testing to determine the TAN number was originally part of the screening but has been discontinued at ANO. A review of 20 years of oil analysis historical data found that the TAN results never impacted the need to change the oil. Engineering determined that a changing viscosity trend is a better indicator of oil distress such as oxidation or contamination and is the leading indicator used at ANO along with visual inspection to determine if oil needs to be changed. The viscosity screening in conjunction with regular oil changes on the majority of the components is acceptable for maintaining the oil quality and equipment health and continues to manage applicable aging effects.

Commitment 17865 - ANO-1 LRA, Appendix B, Section 4.14, Oil Analysis no longer establishes the particle concentration limits based on Society of Automotive Engineers (SAE) 749D for Class 6 oils for components; instead the value is specified in an equivalent International Organization for Standardization (ISO) cleanliness code limit.

Justification: In 2003 ANO implemented an Oil Analysis Program change from using out-of-date SAE 749D particle counting classes to the modern ISO cleanliness codes for trending oil particle counts and specifying limits. Where possible, correlations were made between the old SAE system and the new ISO codes to maintain system cleanliness levels in the range recommended by the manufacturers. More particles can now be "seen" by particle counters than originally detectable when SAE classifications were developed due to the advances in particle counting technology; therefore, the direct crossover between codes results in much more conservative limits than originally intended by the equipment manufacturers when using ISO limits. In changing from the SAE measuring system to the ISO system, oil analysis results that were known to meet the SAE class criteria were reviewed and then the particulate was measured in the ISO code system in order to determine the new limits. Use of the new ISO limits is conservative and continues to ensure aging effects are adequately managed.

Commitment 17868 - Maintaining the Boraflex Program (ANO-1 LRA, Appendix B, Section 4.7) is being deleted.

Justification: The Boraflex in the ANO-1 spent fuel pool (SFP) racks has been abandoned as the credited neutron adsorption material and no longer requires aging management. In its place Metamic inserts were installed in the SFP racks in 2007 and are now credited as the new neutron adsorption material. Metamic properties are monitored in accordance with the Metamic Coupon Sampling Program and ANO-1 Technical Specification Surveillance Requirement 3.7.15.2.

Commitment 17871 - Alloy 600 aging management (ANO-1 LRA, Section 4.1) is being deleted since it is included in the Inservice Inspection (ISI) program (ANO-1 LRA, Appendix B Section 4.3.1).

Justification: Since this commitment was made, the most susceptible locations on the ANO-1 pressurizer identified in the LRA, Section 4.1 have been mitigated by overlay or replacement. Future code-required examinations are identified and controlled through the ISI program. In addition, the examination and inspection requirements for all Alloy 600 components have been incorporated into the ISI Program. ASME has issued several code cases dealing with Alloy 600 components and issues. These code cases essentially "codified" the examination and inspection requirements and, as modified by the NRC in 10CFR50.55a, have been incorporated into the ISI program. Applicable aging effects continue to be monitored with this change.

Commitment 17873 - Control Rod Drive Mechanism (CRDM) Nozzle and Other Vessel Closure Penetration Inspection Program (ANO-1 LRA Section 4.7 of Appendix B) is being deleted since the ASME Section XI, Subsection IWB Inspection Program is managing the effects of PWSCC aging degradation on the CRDM nozzle penetrations in the reactor vessel closure head (RVCH) for the PEO via implementation of ASME Code Case N-729-1.

Justification: Subsequent to issuance of the renewed ANO-1 license, CRDM nozzle cracking and degradation was discovered in the ANO-1 RVCH. In response, an Alloy 690 replacement RVCH was installed in 2005. During this timeframe, the increasing discovery of RVCH and associated penetration nozzle leakage and degradation at pressurized water reactors (PWRs) throughout the industry led to the issuance of NRC orders and subsequent rulemaking requiring expedited implementation of ASME Code Case N-729-1 pertaining to alternative examination requirements for RVCHs in PWRs with nozzles having pressure-retaining partial-penetration welds. Based on material susceptibility to PWSCC as defined in Code Case N-729-1, the Alloy 690 replacement RVCH for ANO-1 is visually examined every third refueling outage and the CRDM nozzles, and the CRDM nozzle partial-penetration J-Groove welds are volumetrically examined every interval. The implementation of Code Case N-729-1 via the ANO-1 ISI Program manages the effects of PWSCC aging degradation on the CRDM nozzle penetrations in the RVCH for the PEO.

Commitment 17874 - Electrical Component Inspection Program (ANO-1 LRA, Appendix B, Section 3.2) requires performance of a visual inspection of the connectors for the impedance sensitive circuits to manage connector corrosion. The program is being revised to allow use of quantitative test data such as the review of calibration and test data for the impedance sensitive instrumentation circuits instead of an inspection.

Justification: Following issuance of the ANO-1 renewed license, the NRC developed NUREG-1801, GALL, Section XI.E2 as aging management program guidance for managing impedance sensitive circuits using calibration results or findings of surveillance testing programs or direct testing of the cable system. The implementation of the ANO-1 commitment using a method consistent with the guidance in NUREG-1801, Section XI.E2, to manage aging of non-environmentally-qualified impedance-sensitive instrumentation circuits' cable system insulation which includes both cable and connectors is more extensive than a visual inspection of the connectors. The use of quantitative data in the review of calibration data along with the review of cable and connection test data is considered to be an enhancement to the commitment of using a visual only inspection which is a qualitative inspection.

Attachment 2 to

1CAN011405

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy Operations, Inc. in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check One)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Commitment 17828 - Instrument Air Quality Program (Arkansas Nuclear One Unit-1 (ANO-1) License Renewal Application (LRA), 1CAN010003, dated January 31, 2000, Appendix B, Section 4.11) references Instrument Society of America Quality Standard S7.3-1975, for guidance on acceptance criteria for instrument air is being revised to reference Quality Standard for Instrument Air ANSI/ISA-S7.0.01-1996.		X	May 20, 2014
Commitment 17830 - Flow rate monitoring of the makeup pump room coolers VUC-7A, VUC-7B, VUC-7C (ANO-1 LRA, Appendix B, Section 4.19, Service Water Integrity Program) is being revised to remove the air flow testing portion of the flow rate monitoring commitment as discussed in Generic Letter 89-13 correspondence 0CAN109205 and adopted in the ANO-1 LRA; service water flow rate through the room coolers continues to be monitored.		X	May 20, 2014
Commitment 17836 - Emergency Feedwater Pump Testing Program (ANO-1 LRA, Appendix B, Section 4.21.6) frequency of once per 31 days is being revised to quarterly.		X	May 20, 2014

Commitment 17847 - Volumetric radiographic testing examination of the reactor building sump Penetration 68 piping valves CV-4400 and CV-4446 (ANO-1 LRA, Appendix B, Section 4.3.7, Modify and Maintain Augmented Inspection Program) is being revised to perform ultrasonic testing examination instead.		X	May 20, 2014
Commitment 17848 - New Pressurizer Examinations Program (ANO-1 LRA Appendix B, Section 3.4) for the pressurizer heater bundle penetration weld examination (from sub-Section 3.4.2) is being revised to credit an Alloy 600 heater bundle inspection performed at Three Mile Island-1 in 2003 to satisfy the commitment.		X	May 20, 2014
Commitment 17853 - ANO-1 LRA, Appendix B, Section 4.9, Flow Accelerated Corrosion (FAC) Prevention, Acceptance Criteria states that any measured wall thickness below, or projected to be below 70% of nominal wall at the next refueling outage is evaluated to determine if additional areas need to be examined. The acceptance criteria of measured wall thickness below or projected to be below 70% of nominal wall at the next refueling outage is being revised to a 87.5% for initial screening criteria for component evaluation.		X	May 20, 2014
Commitment 17853 - ANO-1 LRA, Appendix B, Section 4.9, FAC Prevention Method, states that the current CHECWORKS database tracks safety and non-safety related large bore components in the main steam, main feedwater, condensate, reheat steam, extraction steam, and heater vents and drains systems. This commitment is being revised to reflect that the main steam lines are not tracked in the CHECWORKS database.		X	May 20, 2014

Commitment 17856 - Control room Halon fire system inspection program (ANO-1 LRA, Appendix B, Section 4.8.6) is being revised to change the frequency of visual inspections and Marinite board/acoustical tile inspections from a semi-annual to an annual frequency.		X	May 20, 2014
Commitment 17861 - Fire suppression sprinkler deluge spray system quarterly flush (ANO-1 LRA, Appendix B, Section 4.8.4) is being revised to reflect the National Fire Protection Association guidance of an annual flush of fire suppression sprinkler deluge spray system.		X	May 20, 2014
Commitment 17865 - ANO-1 LRA, Appendix B, Section 4.14, Oil Analysis, states that components that do not have regular oil changes, viscosity and neutralization number are determined to verify the oil is suitable for continued use. Subsequent to ANO-1 LRA submittal, it was determined that the Neutralization Number (Total Acid Number (TAN)) determination was no longer required to determine oil condition, and therefore TAN is no longer used at ANO as an 'oil suitability for continued use' determination component.		X	May 20, 2014
Commitment 17865 - ANO-1 LRA, Appendix B, Section 4.14, Oil Analysis no longer establishes the particle concentration limits based on Society of Automotive Engineers 749D for Class 6 oils for components; instead the value is specified in an equivalent International Organization for Standardization cleanliness code limit.		X	May 20, 2014
Commitment 17868 - Maintaining the Boraflex Program (ANO-1 LRA, Appendix B, Section 4.7) is being deleted.		X	May 20, 2014
Commitment 17871 - Alloy 600 aging management (ANO-1 LRA, Section 4.1) is being deleted since it is included in the Inservice Inspection program (ANO-1 LRA, Appendix B Section 4.3.1).		X	May 20, 2014

Commitment 17873 - Control Rod Drive Mechanism (CRDM) Nozzle and Other Vessel Closure Penetration Inspection Program (ANO-1 LRA Section 4.7 of Appendix B) is being deleted since the American Society of Mechanical Engineers (ASME) Section XI, Subsection IWB Inspection Program is managing the effects of primary water stress corrosion cracking aging degradation on the CRDM nozzle penetrations in the reactor vessel closure head for the period of extended operation via implementation of ASME Code Case N-729-1.		X	May 20, 2014
Commitment 17874 - Electrical Component Inspection Program (ANO-1 LRA, Appendix B, Section 3.2) requires performance of a visual inspection of the connectors for the impedance sensitive circuits to manage connector corrosion. The program is being revised to allow use of quantitative test data such as the review of calibration and test data for the impedance sensitive instrumentation circuits instead of an inspection.		X	May 20, 2014