

March 29, 2004

LICENSEE: Entergy Nuclear Generation Company

FACILITY: Arkansas Nuclear Station, Unit 2

SUBJECT: SUMMARY OF TELEPHONE CALL BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) AND THE ENTERGY OPERATIONS INCORPORATED CONCERNING QUESTIONS PERTAINING TO THE AGING MANAGEMENT REVIEW FOR THE ARKANSAS NUCLEAR ONE, UNIT 2 LICENSE RENEWAL APPLICATION (TAC NO. MB8402)

On January 20, 2004, the NRC's staff and representatives of the Entergy Operations held a telephone conference to discuss questions pertaining to the Aging Management Review Audit for the Arkansas Nuclear One, Unit 2 License Renewal Application (LRA). On the basis of the discussion, the applicant plans to submit written responses to the audit questions. A summary of the topics discussed is presented below:

B.1.30.1 Auxiliary Systems Water Chemistry Control

Question B.1.30.1-1:

In LRA B.1.30.1, the applicant states that the auxiliary systems water chemistry control program covers selected nonsafety-related systems and components affecting safety-related systems. The audit team was not able to identify the exact system components in LRA Sections 2.0 and 3.0. Please identify LRA sections or tables that contain these nonsafety related systems and components.

Question B.1.30.1-2:

In LRA B.1.30.1 and applicant's ANO-2 plant procedure 1052.027, Auxiliary Systems Water Chemistry Monitoring, the audit team could not find the industry guidance, (e.g. EPRI reports TR-107396 or TR-102134), in the reference section of the procedure. Provide a list of industry guidance (such as EPRI reports) used in the AMP and procedure 1052.027.

Question B.1.30.1-3:

In the ANO-2 Program Comparison Document PCD-01, page 52, the applicant discusses typical parameters that are monitored under the auxiliary systems water chemistry control program. However, the applicant did not mention iron and copper which were monitored in the ANO-1 program (see page 51 of PCD-01). (1) Clarify whether iron and copper are being monitored in the ANO-2 program. (2) Discuss whether the parameters monitored/inspected under this program are consistent with industry guidance (e.g. EPRI reports TR-107396 or TR 102134).

Question B.1.30.1-4:

In the ANO-2 document PCD-01, Parameters Monitored or Inspected, page 52, the applicant states that the ANO-2 AMP inspects components for visible corrosion, deposits, structural damage, and biological growth. The applicant also states that the systems are inspected when opened for maintenance. (1) If the systems are inspected only when opened for maintenance, discuss the past inspection frequency of the systems covered under this AMP and discuss the likelihood of the systems covered under this AMP being inspected during extended period of operation; (2) Discuss the systems and components that have been inspected (i.e., scope of inspection) in the past and what systems and components would be inspected during the period of extended operation; (3) Discuss whether there are any systems covered under this AMP that have never been inspected and whether component failures (e.g., leakage) occurred in the non-inspected systems, and (4) Describe the inspection technique that will be used during the period of extended operation (e.g., visual inspection comparable to the VT-1 in accordance with the ASME Code Section XI).

Question B.1.30.1-5:

In the applicant's Engineering Report, A2-EP-2002-002-0, Section 4.18.3.B.10, Operating Experience, page 236, the applicant did not provide specific ANO-2 operating experience relating to the systems and components covered under this AMP. Discuss whether there have been any condition reports or license event reports relating to chemical excursions or component degradation occurring in the systems that are covered under this AMP.

Question B.1.30.1-6:

In LRA UFSAR A.2.1.31, the applicant needs to reference specific industry guidance for the auxiliary system water chemistry program similar to NUREG-1800, Table 3.3-2 (page 3.3-17) and Table 3.1-2 (page 3.1-23), or, justify for not including industry guidance in LRA A.2.1.31.

B.1.30.2 Closed Cooling System Water Chemistry Control

Question B.1.30.2-1:

In the applicant's Engineering report, A2-EP-2002-002-0, Section 4.18.2.B.2.b, Preventive Actions, page 227, the applicant states that its closed cooling water chemistry control program follows the guidance in EPRI TR-107396. The applicant also references ANO-2 plant procedure 1052.027, Auxiliary Systems Water Chemistry Monitoring, which implies that 1052.027 is a document that implements the closed cooling system water chemistry control. However, the staff did not find EPRI report TR-107396 listed in the reference section of the plant procedure 1052.027. Clarify whether TR-107396 is used in procedure 1052.027. If not, identify the industry guidance that is used in procedure 1052.027.

Question B.1.30.2-2:

In LRA B.1.30.2 and the applicant's engineering report, A2-EP-2002-002-0, Section 4.18.2.B.3, page 228, the applicant states that the ANO-2 AMP takes exception to the parameters

monitored/inspected attribute in GALL XI.M21. The applicant's AMP only monitors chemistry parameters whereas GALL XI.M21 specifies surveillance testing and inspection in addition to chemistry parameter monitoring. GALL states that in accordance with EPRI TR-107396, pump and heat exchanger parameters should be monitored. For pumps, flow and discharge and suction pressures should be monitored. For heat exchangers, the parameters monitored include flow, inlet and outlet temperatures, and differential pressure. The applicant needs to justify the acceptability of the AMP's exception to this attribute in GALL XI.M21 that monitoring only the chemistry parameters is sufficient to protect system components from degradation without monitoring parameters of pumps and heat exchangers in the system.

Question B.1.30.2-3:

In LRA B.1.30.2 and the applicant's engineering report, A2-EP-2002-002-0, Section 4.18.2.B.4, page 228, the applicant states that the ANO-2 AMP takes exception to the Detection of Aging Effects attributes in GALL XI.M21. The ANO-2 AMP takes no credit for the detection of aging effects through performance and functional testing. The applicant further states that aging effects on passive mechanical components in closed-cycle cooling water (CCCW) system are adequately managed without reliance on performance and functional testing. In GALL XI.M21, it is stated that control of water chemistry does not preclude corrosion at locations of stagnant flow conditions or crevices. GALL specifies that extent and schedule of inspections and testing should be performed in accordance with EPRI report TR-107396. Performance and functional testing of components ensures acceptable functioning of the CCCW system or components served by the CCCW system. For systems and components in continuous operation, performance adequacy is determined by monitoring data trends for evaluation of heat transfer fouling, pump wear characteristics, and branch flow changes. Components not in continuous operation are periodically tested to ensure operability. The applicant needs to justify the acceptability of the AMP's exception to this attribute in GALL XI.M21.

Question B.1.30.2-4:

In LRA B.1.30.2 and the applicant's engineering report, A2-EP-2002-002-0, Section 4.18.2.B.5, page 229, the applicant states that the ANO-2 AMP takes exception to the Monitoring and Trending attribute in GALL XI.M21. The applicant states that this AMP performs the chemistry parameter sampling, but does not perform performance or functional tests as specified in TR-107396. Per EPRI TR-107396, performance and functional tests are performed at least every 18 months to show system operability, and tests to evaluate heat removal capability of the system and degradation of system components are every five years. The applicant needs to justify the acceptability of the AMP's exception to this attribute in GALL XI.M21 that the intended function of the CCCW system and components served by the CCCW system can be maintained during the period of extended operation without performing performance and functional tests periodically as specified in EPRI TR-107396.

Question B.1.30.2-5:

In LRA B.1.30.2 and the applicant's engineering report, A2-EP-2002-002-0, Section 4.18.2.B.6, page 230, the applicant states that the ANO-2 AMP takes exception to the Acceptance Criteria attribute in GALL XI.M21. The applicant states that the nitrite corrosion inhibitor concentrations are maintained within specified limits, which allow for larger variance (1200 ppm - 4000 ppm) than recommended (500 ppm - 1000 ppm) in EPRI TR-107396. The applicant needs to provide

technical basis for using different limits on nitrite corrosion inhibitor concentrations than EPRI TR-107396 and to justify that its concentration limits will not increase the probability of corrosion in the system components.

Question B.1.30.2-6:

In the applicant's Engineering report, A2-EP-2002-002-0, Section 4.18.2.B.10, Operating Experience, page 232, the applicant did not provide any specific operating experience in the systems covered under this program. Discuss whether corrosion or chemistry excursion has occurred in the CCCW system components.

Question B.1.30.2-7:

In NUREG-1800, Table 3.3-2, page 3.3-17, under the closed-cycle cooling water system, it is stated that "...The program relies on preventive measures to minimize corrosion by maintaining inhibitors and by performing non-chemistry monitoring consisting of inspection and nondestructive evaluations based on the guidelines of EPRI-TR-107396 for closed-cycle cooling water systems." In applicant's UFSAR Supplement LRA A.2.1.32, the applicant did not refer to inspection and nondestructive evaluations. The applicant needs to revise ANO-2 UFSAR Supplement in LRA A.2.1.32 to be consistent with NUREG-1800, Table 3.3-2, or, justify the acceptability of the inconsistency between LRA A.2.1.32 and NUREG-1800.

B.1.30.3 PRIMARY AND SECONDARY WATER CHEMISTRY CONTROL PROGRAM

Question B.1.30.3-1:

In the applicant's Engineering Report A2-EP-2002-002-0, Section 4.18.1.B.4.b, page 221, the applicant states that inspection of selected components is undertaken to verify the effectiveness of the chemistry control program and to ensure that significant degradation is not occurring and the component intended function during the extended period of operation. The audit team is not clear regarding the applicant's schedule and scope of the inspection. The applicant needs to discuss (1) what is the inspection schedule/frequency prior to and during the period of extended operation to confirm the effectiveness of the primary and secondary chemistry control, and (2) which components will be inspected to show the effectiveness of the water chemistry programs.

Question B.1.30.3-2:

The audit team found differences between UFSAR Supplement in LRA Section A.2.1.33 (page A-19) and NUREG-1800, FSAR Supplement, Table 3.1-2, Water Chemistry (page 3.1-23). The major difference is that EPRI reports TR-102134 and TR-105714 are not referenced in LRA A.2.1.33. The applicant needs to revise LRA UFSAR Section A.2.1.33 to be consistent with NUREG-1800, FSAR Supplement, Table 3.1-2 (page 3.1-23), or justify the acceptability of the inconsistency between UFSAR Supplement in LRA Section A.2.1.33 (page A-19) and NUREG-1800, FSAR Supplement, Table 3.1-2, Water Chemistry (page 3.1-23).

A draft copy of this summary was provided to the applicant to give them an opportunity to comment prior to the summary being issued. A listing of the participants in the telephone conference calls is provided in Enclosure 1.

/RA/

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Office of Nuclear Reactor Regulation

Docket No: 50-368

Enclosure: 1. List of Attendees

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Accession No: ML040900270

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March 10, 2004

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