UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

June 12, 2013

Jeremy Browning, Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 SR 333
Russellville, AR 72802-0967

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 – NRC POST-APPROVAL LICENSE RENEWAL INSPECTION REPORT 05000313/2013008

Dear Mr. Browning:

On May 9, 2013, U.S. Nuclear Regulatory Commission inspectors completed a Post-Approval Site Inspection for License Renewal at Arkansas Nuclear One, Unit 1. The enclosed report documents the inspection results, which were discussed on May 9, 2013, with Mr. J. McCoy, Director, Engineering, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based upon the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Geoffrey Miller, Chief
Engineering Branch 2
Division of Reactor Safety

Docket: 50-313
License: DPR-51

cc w/Enclosure: NRC Inspection Report 05000313/2013008
w/Attachment: Supplemental Information

Electronic Distribution for Arkansas Nuclear One

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000313
License:	DPR-51
Report:	05000313/2013008
Applicant:	Entergy Operations Inc.
Facility:	Arkansas Nuclear One, Unit 1
Location:	Junction of Hwy. 64 West and Hwy. 333 South Russellville, Arkansas
Dates:	May 6 – 9, 2013
Inspectors:	G. Pick, Senior Reactor Inspector B. Correll, Reactor Inspector
Approved By:	Geoffrey Miller, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000313/2013008; 05/06/2013 – 05/09/2013; Arkansas Nuclear One, Unit 1, Post-Approval Site Inspection for License Renewal

The report covers an inspection conducted by regional inspectors in accordance with NRC Manual Chapters 2515 and NRC Inspection Procedure 71003.

The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, “Significance Determination Process” (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG–1649, “Reactor Oversight Process,” Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA5 Other - Post-Approval Site Inspection for License Renewal (Phase 1) – IP 71003

The inspectors reviewed a sample of license renewal activities scheduled in the spring 2013 while the plant was shut down for Refueling Outage 1R24. The inspectors selected this period because it allowed an opportunity to evaluate inaccessible areas prior to entry into the period of extended operation. The period of extended operation is the additional 20 years beyond the original 40-year licensed term. The period of extended operation begins after midnight on May 20, 2014. The specific areas walked down during the inspection are listed in Section 01.b.4.

NRC inspectors performed this inspection to evaluate whether the licensee: (1) completed the necessary actions to comply with the license condition and commitments that are a part of the renewed operating license; (2) implemented the aging management programs and time-limited aging analyses as described in the updated final safety analysis report; (3) followed the guidance in NEI 99-04, "Guidelines for Managing NRC Commitment Changes," for changing license renewal commitments; (4) identified, evaluated, and incorporated "newly identified" structures, systems, and components into their aging management programs; (5) implemented programs that agreed with those approved in the safety-evaluation report and described in the updated final safety analysis report; and (6) implemented operating experience review and corrective action programs that account for aging effects. Specific activities evaluated during this inspection are described in the following paragraphs.

.01 Review of Aging Management Programs

a. Inspection Scope

The inspectors evaluated whether the licensee implemented the aging management programs described in NUREG-1743, "Safety Evaluation Report (SER) Related to the License Renewal of Arkansas Nuclear One, Unit 1." The inspectors verified that the licensee implemented procedures, documented inspection results, initiated corrective action documents, and provided training to implementing personnel.

The inspectors reviewed supporting documents including implementing procedures, work orders, inspection reports, engineering evaluations, and condition reports; conducted interviews with licensee staff; and visually inspected structures, systems, and components including those not accessible during power operation to verify that the licensee completed the necessary actions to comply with the license conditions stipulated in the renewed facility operating license.

The inspectors listed specific documents reviewed in the attachment.

b. Findings and Observations

.1 Reactor Coolant Pump Oil Collection System Inspection Program (FSAR 16.2.8.7)

The Reactor Coolant Pump Oil Collection System Inspection aging management program specifies that the licensee will "ensure integrity of the reactor coolant pump oil leakage collection system. The inspection program performs routine inspection to identify loss of material and loss of mechanical closure integrity caused by general corrosion of the carbon steel internal surfaces or external surfaces due to the potential for water leakage into the system."

The inspectors verified Procedure 1504.001 "Visual Inspection of the Unit 1 & 2 RCP Oil Collection System," Revision 9, managed the aging mechanisms for the oil collection system. The inspectors visually inspected the reactor coolant pumps and the oil collection system, conducted interviews with engineering personnel, and reviewed inspection documents and records related to review of the oil collection system.

The inspectors identified indications of minor oil leaks and boric acid deposits within the reactor coolant pump shroud and seal areas. The licensee had previously identified these deficiencies and entered the items in their corrective action program. The inspectors determined the licensee placed an appropriate priority for correcting these leaks.

Based on review of the procedures and records, and discussions with licensee personnel, the inspectors concluded this aging management program would manage the aging effects as described in the safety evaluation report and the updated final safety evaluation report.

.2 Reactor Building Sump Closeout Inspection Program (FSAR 16.2.17)

The Reactor Building Sump Closeout Inspection aging management program specified that the licensee will "detect significant degradation of the sump components and remove foreign objects that could impede suction from the sump. The inspection program performs routine inspection to manage loss of material and cracking of the reactor building sump screens and sump components, and will also inspect for structural distress, corrosion, signs of rust, physical degradation, or tears in the screen and internal components."

The inspectors verified Procedure 1015.036 "Containment Building Closeout," Revision 39, managed the aging mechanisms for the reactor building sumps and components. The inspectors visually inspected the interior of the sump and surrounding area, conducted interviews with personnel, and reviewed inspection procedures and records related to the reactor building sumps.

During visual inspections of the sump, the inspectors identified corrosion on the sump recirculation suction valve penetration piping. The licensee had previously identified and documented this issue in Condition Report 2012-01333. The licensee confirmed that the

IWB and IWE programs monitored the surface corrosion for this penetration and had concluded that no significant loss of material had occurred.

Based on review of the procedures and records, and discussions with licensee personnel, the inspectors concluded this aging management program would manage the aging effects as described in the safety evaluation report and the updated final safety evaluation report.

.3 Annual Emergency Cooling Pond Sounding (FSAR 16.2.21.1)

The Annual Emergency Cooling Pond Sounding aging management program specified that the licensee will "verify the availability of a sufficient supply of cooling water in the emergency cooling pond to handle design basis accidents with a concurrent loss of Lake Dardanelle. The scope includes the emergency cooling pond and surrounding structural components. The aging effect managed by this program is a loss of form of the emergency cooling pond due to sedimentation."

The inspectors verified that Procedure 1306.019, "Annual Emergency Cooling Pond Sounding," Revision 14, took appropriate measurements and adequately managed the aging effect of loss of form resulting from sedimentation. The inspectors reviewed design information to verify the configuration and operational requirements for the emergency cooling pond and results of past emergency cooling pond sedimentation measurements. The inspectors discussed the history behind the emergency cooling pond and any changes that may have affected operational characteristics.

Based on review of the procedures and records and discussions with licensee personnel, the inspectors concluded this aging management program would manage the aging effects as described in the safety evaluation report and the updated final safety evaluation report.

.4 Structures Monitoring

The inspectors performed the walkdowns of inaccessible areas looking for signs of aging, such as corrosion on piping and supports, corrosion of cable trays, water intrusion, cracking and spalling of concrete.

Specific areas walked down and components evaluated during this inspection included:

- Reactor building steam generator D-rings
- Reactor building general areas
- Reactor building sumps
- Reactor building polar crane structure
- Reactor coolant pump oil collection system
- Letdown heat exchanger room
- Make-up tank room
- Emergency diesel generator fuel tank vaults
- Portion of service water pipe tunnel

During the walkdowns, the inspectors identified aging effects that did not affect the function of the structures, systems, or components. These indications included surface corrosion on some supports and bolting, surface cracks with evidence of calcium oxide on concrete walls, and boric acid on walls from previous leaks. Some specific indications that the inspectors questioned included:

- A frayed cable at the entry to junction box TB-263 for the Reactor Coolant Pump D motor. The licensee documented this deficiency in Condition Report 2013-01309. The licensee determined that this was an abandoned speed sensor cable.

- Rust and boric acid emanated from a bolt hole on the underside of Valve CV-2419, core flood tank T-2B outlet isolation, which indicated prior leakage. The licensee documented this deficiency in Condition Report 2013-01334.

  The inspectors discussed the deficiency with the licensee and confirmed that an active leak at this valve had been previously corrected. Because the licensee could not determine if the boric acid resulted from active leakage, the licensee included this location as one specifically to evaluate during the walkdowns at normal operating pressure and temperature.

- Discolored areas identified around in-core detector penetrations ICD-10 and ICD-46. The licensee documented this deficiency in Condition Report 2013-01338. The licensee demonstrated that these penetrations had been replaced during the previous outage and that the discoloration had resulted from previous leakage from the penetrations.

The inspectors concluded that the licensee initiated appropriate actions to evaluate the impact of the identified deficiencies.

.02 Operating Experience and Corrective Action Programs

a. Inspection Scope

The inspectors reviewed the operating experience program to determine whether the licensee updated aging management programs to account for operating experience issued since the licensee had received the renewed license and any changes to the Generic Aging Lessons Learned Report or other approved topical reports.

The inspectors reviewed the corrective action program to evaluate whether the applicant established a method to evaluate the effects of aging and to identify deficiencies that may have resulted from aging effects.

b. Observations and Findings

Entergy corporate developed a pilot assessment of the differences between Generic Aging Lessons Learned Report, Revision 2, and the version in effect when a plant received the renewed license. Three of the plants were tasked with the assessment including Arkansas Nuclear One, Unit 1, as documented in Condition Report LO-WTHQN-2012-00675. The license had not completed evaluating the differences between their aging management programs and the aging management programs described in the Generic Aging Lessons Learned Report, Revision 2.

The inspectors determined that the licensee expected to complete their reviews for the assessment in September 2013. The inspectors will review the results of this assessment as part of the Phase 2 inspection during the first quarter 2014.

40A6 Meetings, Including Exit

The inspectors presented the inspection results to J. McCoy, Director, Engineering, and other members of the Arkansas Nuclear One staff during an exit meeting conducted on May 9, 2013. The licensee acknowledged the NRC inspection observations. The inspectors retained no proprietary information and verified that no proprietary information was documented in this report.

SUPPLEMENTAL INFORMATION

PERSONNEL CONTACTED

Licensee Personnel

R. Fougerousse, License Renewal Contractor
E. Gresh, License Renewal Project Manager
L. Howard, License Renewal Contractor
T. Ivy, License Renewal Manager
D. James, Director, Nuclear Safety Assurance
C. Johnson, Civil Engineer Design
J. McCoy, Director, Engineering
M. McInerney, License Renewal Contractor
N. Mosher, Licensing Specialist
S. Pyle, Licensing Manager
A. Remer, Senior Project Manager

NRC Personnel

A. Sanchez, Senior Resident Inspector

DOCUMENTS REVIEWED

General

LICENSE RENEWAL

NUMBER	TITLE	REVISION/ DATE
1CAN010003	License Renewal Application	February 1, 2000
NUREG-1801, Volume 2	Generic Aging Lessons Learned (GALL) Report	September 2005
NUREG-1743	Safety Evaluation Report Related to the License Renewal of Arkansas Nuclear One, Unit 1	April 2001
USAR Chapter 16	Aging Management Programs and Activities	24

Aging Management Programs

CALCULATIONS

NUMBER	TITLE	REVISION
96-R-0003-05	Maintenance Rule Walkdown for Evaluation of Structures	0
ANO1-FP-09-00007	Annual Emergency Cooling Pond Sounding	14
ANOC-CS-10-00002	2010 Maintenance Rule Structural Monitoring 5 year Walkdown of High Risk Structures and 10 year Walkdown of Low Risk Structures	0

CONDITION REPORTS (CR-ANO-1-)

2001-00292	2011-01680	2011-02350	2011-02577	2012-00012
2012-00240	2012-01604	2012-01606	2013-00564	2013-00598
2013-00615	2013-00674	2013-00679	2013-00702	2013-00740
2013-01302*	2013-01303*	2013-01309*	2013-01327*	2013-01331*
2013-01333*	2013-01334*	2013-01336*	2013-01338*	

*Condition Reports generated during the inspection

DRAWINGS

NUMBER	TITLE	REVISION
M-85-BC-1	Emergency Diesel Fuel Tank13’ X 20’ Shell	0
M-219	Piping and Instrument Diagram – Fire Water	83
C-65	Emergency Cooling Reservoir	12
C-69	Emergency Cooling Pond – Original Spillway	11
C-663, Sh 2	ECP Spillway Replacement Design Drawings – Site Plan	0
C-663, Sh 3	ECP Spillway Replacement Design Drawings – Spillway Plan	0
C-663, Sh 4	ECP Spillway Replacement Design Drawings – Embankment Sections	0
C-663, Sh 5	ECP Spillway Replacement Design Drawings – Detailed Spillway Plan	0

DRAWINGS

NUMBER	TITLE	REVISION
C-663, Sh 6	ECP Spillway Replacement Design Drawings – Spillway Sections and Detail Sheet 1 of 2	0
C-663, Sh 7	ECP Spillway Replacement Design Drawings – Spillway Sections and Detail Sheet 2 of 2	0
C-663, Sh 8	ECP Spillway Replacement Design Drawings – Retaining Wall Plan, Elevation, Sections and Detail	0
C-663, Sh 10	ECP Spillway Replacement Design Drawings – Concrete Joints Plan and Details	0
C-663, Sh 11	ECP Spillway Replacement Design Drawings – Erosion & Sedimentation Control Plan and Details	0
C-115	Reactor Building Miscellaneous Steel Coolant Pump & Hot Leg Restraints	8
C-145	Reactor Building Polar Crane Girder	5
C-166, Sh 3	Reactor Building Polar Crane Support Steel Modifications	1
C-299, Sh 12	Blockwall Elevations Wall 4-B-123 to 4-B-137	7

PROCEDURES

NUMBER	TITLE	REVISION
1015.036	Containment Building Closeout	39
1306.019	Annual Emergency Cooling Pond Sounding	14
1504.001	Visual Inspection of the Unit 1 & 2 RCP's Oil Collection System	9
EN-DC-150	Condition Monitoring of Maintenance Rule Structures	4

MISCELLANEOUS

TITLE	REVISION/ DATE
1-ISI-VT-13-051, IWE Evaluation of Containment Liner In Letdown Heat Exchanger Room	May 8, 2013
Calculation , NFPA 13 (1971) Code Compliance Evaluation – Unit 1 EDG Rooms, Electrical Penetration Rooms, and Cable Spreading Rooms	
DVD by Jamko Technical Solutions Inc. of Reactor Pressure Vessel Head Examinations	March 2010
Engineering Report 93-R-1015-05, Aging Management Review of the Emergency Cooling Pond and Intake/Discharge Canals	2
Inspection Report 50-313/01-03 and 50-368/01-03 and Public Exit Meeting	
Self-Assessment (LO-WTHQN-2012-00675) of Operating Experience in Generic Aging Lessons Learned Report Compared to the Aging Management Programs for Arkansas Nuclear One, Unit 1	
System Training Manual 1-03, Reactor Coolant System	19

WORK ORDERS

52283832-01 52374901-01