

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
REGION IV

Dockets 50-313/81-24  
50-368/81-23

Licenses DPR-51  
NPF-6

Licensee: Arkansas Power and Light Company  
P. O. Box 551  
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One (ANO), Units 1 and 2

Inspection at: ANO Site, Russellville, Arkansas

Inspection Conducted: July 23-24, 1981

Inspector: *D. M. Hunnicutt* 8/12/81  
D. M. Hunnicutt, Chief, Reactor Projects Section 2 Date

Approved: *G. L. Madsen* 8/12/81  
G. L. Madsen, Chief, Reactor Projects Branch Date

Inspection Summary

Inspection conducted during period of July 23-24, 1981 (Report 50-313/81-24)

Area Inspected: Routine, unannounced inspection to obtain and evaluate information related to the repair of the lower manway for steam generator "A". This manway was identified as the pathway for a primary coolant system leak of about 2.5 gpm.

The inspection involved six inspector-hours on site by one NRC inspector.

Results: In the one area inspected, no violations or deviations were identified.

Inspection conducted during period of July 23-24, 1981 (Report 50-368/81-23)

Area Inspected: Routine, unannounced inspection to obtain data and perform independent measurement of the reactor coolant system leak rate for Unit 2 (CE - PWR).

This inspection involved eight inspector-hours on site by one NRC inspector.

Results: In the one area inspected, no violations or deviations were identified.

DETAILS SECTION1. Persons Contacted

- \*B. A. Baker, Operations Manager
- \*L. Dugger, Special Projects Manager

The inspector also contacted other plant personnel, including operators, technicians and administrative personnel.

\*Attended exit interview on July 24, 1981.

2. Independent Measurement of Reactor Coolant System Leak Rate (RCSLR) Unit 2

The inspector independently verified that the RCSLR for the Unit 2 (CE - PWR) RCS was within the Limiting Conditions for Operation (LCO) and that the licensee's calculational technique for determining the RCSLR was adequate.

The licensee's calculational technique and the inspector's independent results were compared. The licensee's identified and unidentified RCSLR were: (1) Total Leakage = 0.119 gallons per minute (gpm); (2) Known Leakage = 0.053 gpm; and (3) Unknown Leakage = 0.066 gpm.

The results of the inspector's independent measurements were: (1) Total Leakage = 0.144 gpm; (2) Known Leakage = 0.053 gpm; and (3) Unknown Leakage = 0.091 gpm.

The RCSLR differences between the licensee's total leakage and the inspector's independent calculations was 0.025 gpm. This difference is within the value normally expected. The inspector determined that the RCSLR was within the Technical Specification limits and the difference between the licensee's and the inspector's results was acceptable.

No violations or deviations were observed.

3. Repair of Lower Manway for "A" Steam Generator Unit 1

On July 15, 1981, an unidentified primary system leak rate of about 2.5 (gpm) gallons per minute occurred. The licensee shut down the unit in compliance with applicable Technical Specification requirements. Subsequently, the source of primary system coolant leakage was determined to be the lower manway on the "A" Steam Generator.

The plant was cooled down on July 15-16, 1981. After cooldown, the insulation was removed from the area of the lower manway, Ultrasonic Examination (UT) was conducted on each of the sixteen studs in the manway bolt circle prior to loosening of these studs, the manway cover was removed, and the studs were removed. The steam generator lower manway area was cleaned and inspected. The manway cover was cleaned and inspected.

Severe erosion/corrosion was observed on the inner surface of the manway cover. The manway cover was repaired by machining approximately 0.070 inch off the inner surface in accordance with an approved procedure. The structural adequacy of the repaired manway cover was analyzed and documented. No welding or cutting fluids were used during the repair process.

The steam generator manway mating surface was repaired by machining about 0.070 inch off the manway surface. No welding or cutting fluids were used during this approved and documented operation.

The licensee's Field Change Authorization (FC-178), approved on July 22, 1981, required the following:

- a. Clean the stud holes, the steam generator manway surfaces and the manway cover as required by B&W Cleaning Specification FS-II-2.
- b. Installation of the manway cover after completion of specified work in accordance with OTSG (Once Through Steam Generator) Instruction Manual Procedure and current revisions (i.e., torque values).
- c. The OTSG shall be subjected to a hydrostatic test.
- d. Magnetic Particle (MT) examination of machined surfaces.

The licensee observed that all stud nuts broke loose at 500 foot-pounds or less (normal torque value is 2000 foot-pounds). The studs were removed and inspected. Some corrosion was observed on several studs and two were more seriously corroded than the other fourteen. These two studs were corroded below the depth of the minor diameter (below the threads) from about 2.7 inches to about 3.5 inches from the lower stud base end (portion inserted into the steam generator shell) and was estimated to be up to about 1/16 inch into the stud wall below the thread minor diameter. This depth of corrosion was probably not sufficient to be detected by the UT performed while the studs were installed in the steam generator shell. Therefore, no indications of this corrosion were observed during the initial UT examination.

The inspector did not evaluate the UT and physical examinations of the original removed studs and nuts. Since these studs and nuts were replaced, the NDT and physical examinations were not of immediate concern.

No violations or deviations were observed.

4. Exit Interview

The inspector met with Messrs. B. A. Baker and L. Dugger on July 24, 1981 at the conclusion of this inspection. The inspector summarized the scope of the inspection and the findings.