

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Report: 50-368/82-32

Docket: 50-368

License: NPF-6

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

Facility Name: Arkansas Nuclear One (ANO), Unit 2

Inspection at: ANO Site, Russellville, Arkansas

Inspection conducted: October 25-29, 1982

Inspectors: *D. P. Tomlinson* 11-05-82
D. P. Tomlinson, Reactor Inspector, Engineering Section Date

for *D. M. Hunnicutt* 11/5/82
J. E. Cummins, Reactor Inspector, Project Section B Date

Reviewed: *for* *D. M. Hunnicutt* 11/5/82
W. D. Johnson, Chief, Reactor Project Section C Date

Approved: *D. M. Hunnicutt* 11/5/82
D. M. Hunnicutt, Chief, Engineering Section Date

Inspection Summary

Inspection conducted October 25-29 1982 (Report 50-368/82-32)

Areas Inspected: Special unannounced inspection of piping hangers following the licensee's report of numerous service water system deficiencies. This inspection involved 49 hours by two NRC inspectors.

Results: Within the areas inspected, no violations or deviations were identified.

DETAILS1. Persons ContactedPrincipal Licensee Personnel

- *J. M. Levine, Site General Manager
- *E. C. Ewing, Production Engineering Superintendent
- C. Halbert, Mechanical Engineering Supervisor
- C. Shively, Superintendent Plant Engineering
- T. Robinson, Mechanical Engineer
- D. Saunders, Piping Group Leader, Engineering II

The NRC inspectors also interviewed other licensee and contractor personnel including members of the engineering and QA/QC staffs.

*Denotes those attending the exit interview.

2. Followup of Potential QA/QC Breakdown

PNQ-IV-82-38 was issued on October 20, 1982, stating that piping hangers and supports in the ANO, Unit 2, small bore service water system contained an exceptionally high number of deficiencies. A walkdown inspection of this system by AP&L and Bechtel personnel had revealed initially that 138 out of 500 hangers were not installed in accordance with design, did not match the as-built drawings, or contained deficiencies in workmanship or installation. This high percentage of deficiencies raised questions about the condition of hangers in other systems on both units and the possibility of breakdown in the QA/QC function. The Unit 2 carbon steel small bore service water system was recently replaced with stainless steel piping and the hangers modified as necessary to accommodate the new piping. After the walkdown inspection disclosed this large number of deficiencies, AP&L voluntarily committed to investigate further by performing a similar inspection on other recently altered or newly-installed systems. Subsequent walkdowns were conducted on the Unit 2 high point vent system, low temperature overpressurization protection system, and part of the feedwater system along with a sample of the Unit 1 small bore service water system.

An engineering analysis by Bechtel and AP&L was initiated to determine the significance of the deficiencies and the actions necessary to assure operability of the Unit 2 small bore service water system. When the deficiencies were compared to the latest as-built drawings and the allowable dimensional tolerances applied, many of the deficiencies were found to be nonexistent.

The application of new stress calculations incorporating the actual nonconforming conditions revealed that design criteria was met and that in none of the cases would the deficiencies have resulted in a failure of the hanger or the piping. Under worst-case conditions, the system would not have been rendered inoperable. Similar analyses were conducted for the deficiencies on the other systems with like results. Even in the cases where hangers were missing, it was found that system failure could not have occurred.

The design for the high point vent system was originated by Bechtel Corporation and field representatives were on site for the modification of the system. As alterations were made, the changes were forwarded verbally by telephone and field sketches telecopied to Bechtel, San Francisco. All changes and modifications were recorded by the field engineers on what are commonly called "red-line drawings" to be used later to produce true as-built drawings of the hangers. When the modifications were completed, the red-line drawings were forwarded, as a package, to Bechtel, San Francisco. These were filed and stored by Bechtel rather than being incorporated into the existing drawings. When AP&L received the red-line drawings and compared these to the high point vent system deficiency list, it was found that most of the conditions were known and were recorded on the drawings. This system of drawing revision and storage is currently being changed by AP&L so that the most current as-built drawings are readily available to the onsite personnel.

One NRC inspector accompanied an inspection team on a portion of the walkdown of the Unit 2 feedwater system. In all cases the hangers were present and were in the proper locations. Two deficiencies were noted by the NRC inspector on hangers 2DBD-2-H2 and 2DBD-2-H14 involving a missing cotter pin and a loose nut on a base plate anchor bolt. These deficiencies were documented by the inspection team and are listed as items to be rectified prior to resumption of operation.

As part of an independent inspection effort, two NRC inspectors selected the hangers noted on Bechtel Stress Calculation Sheet #860 for examination. The inspectors were provided with an isometric piping drawing of the general system layout and the location of the hangers. Stress Calculation Sheet #860 represents a portion of the High Pressure Safety Injection (HPSI) system cross-connect piping between the HPSI pumps. Three pipe anchors, two spring hangers, and four rigid hangers were inspected and found to be in accordance with the detail drawings attached to the stress calculation sheets. All nine hangers were correctly located, all attendant hardware was present and secured and the configuration of each hanger was as specified.

It is apparent to the NRC inspectors, that the most significant problem was not the integrity of the hangers or the piping, but was the inability of site inspection personnel to obtain drawings showing the current as-built conditions prior to performing these walkdown inspections, even though the red-line drawings were completed approximately 18 months ago. Items such as missing hangers and unsecured fasteners appeared to be relatively rare and widely separated. These conditions were found only on newly installed or recently modified systems and does not appear to extend to the original installation of piping and hangers.

As was stated above, AP&L is currently in the process of changing the processing of red-line drawings into true as-built drawings. In the near future, this function, along with the storing of the as-built drawings, will be performed by AP&L at their Little Rock office.

Until these actions have been completed, this will be considered an unresolved item.

No violations or deviations were identified during this inspection.

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. One unresolved item identified during this inspection is discussed in paragraph 2 (8232-01).

4. Exit Interview

The NRC inspectors met with the licensee representatives (denoted in paragraph 1) on October 28, 1982, to discuss the scope and findings of this inspection.