

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report Nos. 50-313/92-15
50-368/92-15

Operating License Nos. DPR-51
NPF-6

Licensee: Entergy Operations, Inc.
Route 3, Box 137G
Russellville, Arkansas 72801

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

Inspection At: ANO, Russellville, Arkansas

Inspection Conducted: March 16-20, 1992

Inspectors: W. M. McNeill, Reactor Inspector, Materials and Quality Programs
Section, Division of Reactor Safety

Approved: I. Barnes
I. Barnes, Chief, Materials and Quality Programs
Section, Division of Reactor Safety

4/9/92
Date

Inspection Summary

Inspection Conducted March 16-20, 1992 (Report 50-313/92-15)

Areas Inspected: Routine, announced inspection pertaining to followup on a 10 CFR Part 21 report and observation of inservice inspection work and work activities.

Results: Within the areas inspected, no violations or deviations were identified. Followup on a Target Rock 10 CFR Part 21 report found that the licensee had performed a timely and appropriate review of the problem. A review of inservice inspection work activities indicated that such activities were well defined and effectively implemented. An inspection followup item was identified (paragraph 3) in regard to ISI program approval and change controls.

Inspection Conducted March 16-20, 1992 (Report 50-368/92-15)

Areas Inspected: No inspection of Unit 2 was conducted.

Results: Not applicable.

DETAILS

1. PERSONS CONTACTED

Entergy Operations, Inc.

- *E. Burns, Inservice Inspection Engineer
- *W. Converse, Supervisor, Engineering Programs
- *M. Cooper, Licensing Specialist
- *C. Gaines, Manager, Industry Event Analysis
- G. Heuertz, Technical Specialist
- *L. Humphrey, Director, Nuclear Quality
- *R. King, Supervisor, Licensing
- *D. Lomax, Manager, Engineering Standards and Programs
- *K. Panther, Quality Specialist
- D. Payne, Technical Specialist
- *J. Ray, Supervisor, Nondestructive Examination
- R. Siocum, Quality Specialist
- *J. Taylor-Brown, Quality Control (QC)/Quality Engineering Superintendent
- *J. Yelverton, General Manager

United States Testing Company, Inc.

- J. Abbot, Level II
- D. Bryant, Level II
- R. Craig, Level II
- R. Hardy, Level III
- S. Hughes, Level II
- M. Konkol, Level II
- G. Kutt, Level II
- J. Little, Level II
- K. Smith, Level II

Factory Mutual Engineering

- J. Elliot, Authorized Nuclear Inservice Inspector (ANI)

NRC

- *L. Smith, Senior Resident Inspector
- *S. Campbell, Resident Inspector

The inspectors also interviewed other employees during the inspection.

*Denotes those persons that attended the exit meeting on March 20, 1992.

2. 10 CFR PART 21 REPORT FOLLOWUP (92700)

On October 24, 1990, Target Rock Corporation issued a 10 CFR Part 21 report on improper material being used for marker strips. The marker strip, located under the terminal boards, provides terminal identification to facilitate wiring the terminal boards. The improper material was limited to a single lot of material. ANO personnel established through Plant Impact Evaluation No. 90-0162-B that most of the questionable material that it had received from Target Rock was in stores. Condition Report No. CR-C-91-0023 was issued to document the nonconforming condition. Material in stores and the five applications outside of stores were found and the questionable material replaced. The licensee's actions appeared timely and appropriate.

3. INSERVICE INSPECTION-OBSERVATION OF WORK AND WORK ACTIVITIES (73753)

The objectives of this area of the inspection were to ascertain whether performance of inservice inspection (ISI) examinations and repair or replacement of components are in accordance with regulatory and ASME Code requirements as well as correspondence between the NRC and the licensee concerning relief requests.

The inspector reviewed the currently used ISI Program Plan, ISI schedule, and implementing ISI procedures (see Attachment 1). ANO-1 was in the second period of the second 10-year interval. This was the last outage in this period. Five hundred sixty-six examinations were scheduled for the current outage. Almost all were to be performed by United States Testing Services Inc. such as penetrant examinations (PTs), magnetic particle examinations (MTs), manual ultrasonic examinations (UTs), and visual examinations (VTs). Four examinations were to be performed by Babcock & Wilcox Co., namely the automated UT of the reactor coolant pump case welds. Seventeen PTs were to be performed by Wyle Laboratories.

The inspector established a sample of components and verified that the ISI Program Plan and ISI schedule identified the sampled components, methods, and the UT calibration block to be used for the examinations. The calibration block used for the examination was visually examined and the applicable inspection report was reviewed by the inspector. The inspector established that the block conformed to ASME Code requirements for configuration and materials.

The inspector examined the current ISI schedule and found the frequency of testing for the sample of components complied with the ASME Code and ISI program requirements. The inspector established that the contractor personnel designated to perform the examinations were qualified to industry standards (i.e., SNT-TC-1A) by review of personnel certification records which included the certifying Level III records. This review included verification of the experience, training, and test grades as well as the scope and period of qualification.

The inspector additionally verified that the certifications for the UT couplant and MT materials (i.e., dry powder and fluorescent particle suspension) conformed to requirements.

The inspector observed the performance of the examinations identified in Attachment 2 and verified that personnel complied with ASME Code and procedure requirements. It was found that the UT equipment had required calibrations performed and that distance amplitude curves had been properly prepared and used. The inspector confirmed use of appropriate lighting levels and that weld surfaces had been correctly prepared and were at a suitable temperature for UT examination. The inspector additionally verified use of correct size, frequency, and angles of UT search units and that scanning techniques (i.e., directions, sensitivity, rate, overlap, and coverage) were in conformance with ASME Code and procedure requirements. For MT, the inspector observed the lift test of the yoke used, the fluorescent suspension centrifuge testing of particle concentration, and the blacklight intensity verification. The observation of MT also included verification of the magnetic field directions and that proper ASME acceptance criteria were being used. The inspector verified the documentation of the examination results, evaluations, and limitations by review of the applicable reports. The inspector noted the oversight of ISI activities of contractors by QC and that the licensee's quality assurance organization was performing a surveillance on a sample of ISI activities.

In regard to repair and replacement activities it was established that all activities were in process and had not progressed to the point of QC inspection. The scope of these activities ranged from replacement of bolting to major replacement of service water piping.

The inspector observed that the ISI Program Plan, Revision 0, had been submitted to the NRC for approval in January 31, 1985, and since that date had been through five revisions. In addition, the current revision had over 30 change documents issued against it. These change documents deleted examinations, added examinations, rescheduled examinations, and changed ASME Code classification of components. Some of these change documents were not serialized and were approved by the same person who initiated the change, without subsequent engineering supervisor approval. In that review of the ISI program was out of the scope of this inspection, a more complete review of the ISI program will be performed at a future date. The review of the ISI program was identified as an inspection followup item (313/9215-01).

In the observation of the MT of the reactor vessel nuts, it was noted that a yoke was used to identify indications parallel to the thread direction and a central conductor technique (i.e., coil of cable) for identification of indications transverse to the thread direction. Previous ISI reports also indicated that a yoke and coil were used. The inspector observed that the magnetizing current used with the central conductor technique did not meet the ASME Section V Code indicated minimum of 500 amperes per inch of diameter. Licensee personnel believed that magnetizing field adequacy had been established by use of a magnetic particle field indicator. The inspector

noted an inconsistency between the text of ASME Code Section V and a Code referenced document in regard to the adequacy of magnetic particle field indicators for establishing field strength. The text of Code states that a magnetic particle field indicator is to be used "when it is necessary to verify the adequacy or direction of the magnetizing field." However, ASTM E709, which is a referenced document in ASME Code Section V, states that a magnetic particle field indicator is not a quantitative indicator of field strength. It would thus appear that use of a magnetic particle field indicator does not in itself assure that an appropriate field strength is present for satisfactory MT to be performed. This subject is being referred to the Office of Nuclear Reactor Regulation for review and consideration of required actions.

3. EXIT INTERVIEW

The inspector conducted an exit interview on March 20, 1992, with those personnel denoted in paragraph 1, at which time the inspector summarized the findings. The licensee did not identify as proprietary any information presented to the inspector.

ATTACHMENT 1

Technical Specifications, Amendment 156, dated January 15, 1992

Inservice Inspection Technical Manual for Arkansas Nuclear One Unit 1,
Revision 5, dated January 23, 1989

Procedures

Procedure 1000.06, "Control of Site NDE," Revision 5

Procedure 1092.025, "Inservice Inspection Program Requirements," Revision 3

Procedure 1092.192, "Control of Inservice Inspection Program Documents,"
Revision 1

Procedure 1415.006, "Ultrasonic Examination ASME Section XI, 1980W/81,"
Revision 2

Procedure 1415.012, "Magnetic Particle Examination ASME Section XI,"
Revision 1

Procedure 1415.015, "Ultrasonic Instrument Linearity Calibration Procedure."
Revision 2

QC Operating Procedure QCO-12, "QC Weld Reference System for Section XI
Inservice Inspection," Revision 0

QC Operating Procedure QCO-13, "Control of Nondestructive Examination,"
Revision 0

Quality Assurance Procedure QAP-21, "ASME Boiler and Pressure Vessel Code
Section XI," Revision 5

ATTACHMENT 2

| <u>Examination Number</u> | <u>Method</u> | <u>Description</u> |
|---------------------------------------|---------------|---|
| 26-024 | UT & MT | Circumferential Pipe Weld to Tee |
| 03-013 | UT | Upper Shell to Nozzle Belt Weld of Steam Generator |
| 01-N-22, 24-28, 32, 33, 35, and 36 | MT | Reactor Vessel Closure Head Nuts |