



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

November 16, 1999

C. Randy Hutchinson, Vice President
Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, Arkansas 72801-0967

SUBJECT: NRC INSPECTION REPORT NO. 50-313/99-09; 50-368/99-09

Dear Mr. Hutchinson:

This refers to the safety system engineering inspection conducted on August 2 to 20, 1999, at the Arkansas Nuclear One, Units 1 and 2, facilities. The inspection continued in the Region IV offices through November 8, 1999. The purpose of this inspection was to perform the core inspection of engineering activities, focusing on the service water system in each unit. The enclosed report presents the results of this inspection. An exit meeting was conducted telephonically on November 8, 1999.

We determined that the service water systems in both units were capable of fulfilling their intended safety functions; however, the systems have been degraded because of fouling, which reduced the heat transfer capability below that assumed in the original design. While we acknowledge that you have remained cognizant of this level of degradation and have implemented continual actions to counter its impact, it appears that some operating margins of the service water systems and associated heat loads have been significantly reduced as the result of this degradation during previous and current operating cycles. In a number of instances, service water system design values appear to be no longer valid. Additionally, as discussed in the enclosed report, some corrective actions to address this degradation have not been timely or adequate.

In evaluating the service water system, we also identified a number of engineering-related performance problems. In some instances, engineers did not initiate condition reports at the time that the underlying system test or design deficiencies became apparent. We encourage you to determine whether there are any generic implications associated with these failures relative to your expectations for site-wide implementation of the corrective action program.

We also identified several instances in which physical changes to the plant were not implemented in accordance with the appropriate design control processes because these changes were not recognized as modifications, either temporary or permanent. As a consequence, safety evaluations were not always performed, the Final Safety Analysis Report was not always updated, and the full impact of changes was not always recognized and evaluated. One of these changes resulted in a long-standing operator work-around, which was

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not recognized by your staff. In reviewing this mater, we encourage you to determine whether other structures, systems, or components may be similarly affected.

The inspection also revealed a number of recurring service water system flow test failures. Not all of these failures were sufficiently resolved prior to past restarts of Unit 2. While your staff was able to demonstrate that the systems remained operable in spite of these failures, our inspection revealed that, for example, the trend information available for the Unit 2 emergency diesel generator jacket water coolers indicated that the coolers would not maintain sufficient flow throughout an operating cycle and would not meet the acceptance criteria during the next scheduled test.

As discussed during the exit meeting conducted on November 8, 1999, we request that you provide a written response to this report. We understand that this response will be provided by February 10, 2000. In your response, we request that you: 1) provide your views regarding the adequacy of the overall material condition of both units' service water systems (including the adequacy of programs and processes, as well as their implementation effectiveness, for maintaining the design capability and margins of these systems); 2) discuss the actions you have taken or planned to address service water system degradation; and 3) discuss any other actions you have taken or planned in response to this inspection.

Based on the results of this inspection, the NRC has also determined that five Severity Level IV violations of NRC requirements occurred. These violations are being treated as noncited violations, consistent with Appendix C of the Enforcement Policy. These noncited violations are described in the subject inspection report. If you contest the violation or severity level of these noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Arkansas Nuclear One, Units 1 and 2, facilities.

Five unresolved items were identified by the team. These items involved: 1) additional licensee evaluation of the combined effects on the Unit 2 emergency diesel generators of under-predicting the heat load and microfouling in the heat exchangers; 2) additional NRC review of instrument uncertainties; 3) additional licensee evaluation of the effects of excessive service water flow on system components; 4) additional licensee evaluation of the integral effects on containment air cooler outlet butterfly valves, as a result of throttling, and the potential for flashing associated with clean heat exchangers; and 5) additional licensee evaluation of available net-positive suction head for only one service water pump operating during a normal plant shutdown. These matters are discussed in Sections E1b.3, E2b.2, E2b.4, E3b.2, and E4b.4 of the enclosed inspection report.

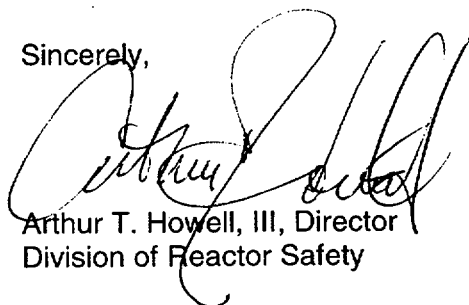
It is our understanding that, during the telephonic exit meeting on November 8, 1999, you stated that Entergy Operations, Inc. would replace the carbon steel service water pipe on the Unit 2 Loop 1 emergency diesel generator during the Unit 2 mid-cycle outage which will be conducted in November 1999. This commitment was made in response to a team finding that

test data indicated there would be insufficient flow at the end of this operating cycle to meet the required design flow. Please confirm this regulatory commitment in writing within 30 days of the date of this letter.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if provided, will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



Arthur T. Howell, III, Director
Division of Reactor Safety

Docket Nos.: 50-313; 50-368
License Nos.: DPR-51; NPF-6

Enclosure:
NRC Inspection Report No.
50-313/99-09; 50-368/99-09

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E-Mail report to T. Frye (TJF)
 E-Mail report to D. Lange (DJL)
 E-Mail report to NRR Event Tracking System (IPAS)
 E-Mail report to Document Control Desk (DOCDESK)

bcc to DCD (IE01)

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* See previous concurrence

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