



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

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

SEP - 5 1995

EA 95-085

Entergy Operations, Inc.  
ATTN: J. W. Yelverton, Vice President  
Operations, Arkansas Nuclear One  
1448 S.R. 333  
Russellville, Arkansas 72801-0967

SUBJECT: NRC INSPECTION REPORT 50-313/95-12; 50-368/95-12

Thank you for your letter of August 16, 1995, in response to our letter and Notice of Violation dated July 17, 1995. We have reviewed your reply and find it responsive to the concerns raised in our Notice of Violation. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,

J. E. Dyer, Director  
Division of Reactor Projects

Dockets: 50-313  
50-368  
Licenses: DPR-51  
NPF-6

cc:  
Entergy Operations, Inc.  
ATTN: Harry W. Keiser, Executive  
Vice President & Chief Operating Officer  
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Entergy Operations, Inc.

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Entergy Operations, Inc.  
ATTN: Jerrold G. Dewease, Vice President  
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County Judge of Pope County  
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Russellville, Arkansas 72801

Winston & Strawn  
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Arkansas Department of Health  
ATTN: Ms. Greta Dicus, Director  
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SEP - 5 1995

bcc to DMB (IE01)

bcc distrib. by RIV:

L. J. Callan  
 Branch Chief (DRP/C)  
 MIS System  
 RIV File  
 Project Engineer (DRP/C)  
 W. B. Jones, ES  
 J. Lieberman, OE, MS: 7-H-5

Resident Inspector  
 Leah Tremper (OC/LFDCB, MS: TWFN 9E10)  
 DRSS-FIPB  
 Branch Chief (DRP\TSS)  
 G. F. Sanborn, EO  
 W. L. Brown, RC

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9/5/95	9/5/95	9/5/95				

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bcc to DMB (IE01)

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9/5/95	9/5/95	9/5/95				

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080027

Jerry W. Yelverton  
Vice President  
Operations ANO

August 16, 1995

OCAN089502

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Mail Station P1-137  
Washington, DC 20555Subject: Arkansas Nuclear One - Units 1 and 2  
Docket Nos. 50-313 and 50-368  
License Nos. DPR-51 and NPF-6  
Response To Inspection Report  
50-313/95-12; 50-368/95-12  
EA 95-085

- References:
- (1) Letter, Mr. A. Bill Beach to Mr. J. W. Yelverton, dated May 22, 1995, (Inspection Report 50-313/95-12; 50-368/95-12)
  - (2) Letter, Mr. A. Bill Beach to Mr. J. W. Yelverton, dated June 23, 1995, (Enforcement Conference Presentation)
  - (3) Letter, Mr. L. J. Callan to Mr. J.W. Yelverton, dated July 17, 1995 (Inspection Report 50-313/95-12; 50-368/95-12, Notice of Violation)

Gentlemen:

Pursuant to the provisions of 10CFR2.201, attached is the response to the Notice of Violation identified during the inspection of activities associated with the circumstances surrounding the higher than expected radiation dose rates and accumulated exposure received during the installation of the core support assembly (CSA) in the Arkansas Nuclear One (ANO) Unit 1 reactor vessel on March 9, 1995.

Entergy Operations acknowledges the significance of the CSA higher than anticipated exposure event and is concerned with the diversity of the inappropriate actions that occurred prior to and during the event. Following the higher than anticipated exposure event, Entergy Operations performed a thorough investigation and identified the inappropriate actions and associated causes of the event. Additionally, Entergy Operations has developed a comprehensive corrective action plan that addresses each inappropriate action and associated cause.

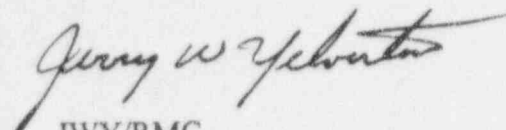
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The chronology of the CSA event is detailed in references 1 and 2. The root causes of the event and those corrective actions that were immediate, completed and "to be completed" were presented to the Nuclear Regulatory Commission (NRC) during the June 15, 1995, enforcement conference and are detailed in reference 2. The presented corrective action plan consisted of approximately 35 actions to be completed prior to either the upcoming ANO Units 1 or 2 refueling outages and those proposed by Babcock and Wilcox Nuclear Technologies (BWNT). It is Entergy Operations' intent to complete each identified corrective action in accordance with our corrective action program; however, only those corrective actions outlined in this NOV response are considered NRC commitments.

Should you have any comments or questions, please call Mr. Dwight Mims at 501-858-4601.

Very truly yours,



Jerry W. Yelton

JWY/RMC

Attachments

To the best of my knowledge and belief, the statements contained in this submittal are true.

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for Johnson County and the State of Arkansas, this 16th day of August 1995.

Juana M. Tapp  
Notary Public  
My Commission Expires 11-8-2000



cc: Mr. Leonard J. Callan  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region IV  
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Mr. George Kalman  
NRR Project Manager Region IV/ANO-1 & 2  
U. S. Nuclear Regulatory Commission  
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Rockville, MD 20852

A. Response to violation:

(1) Reason for the violation:

The root cause for the NOV associated with the failure to terminate the entry after alarming dosimeters alarmed on accumulated dose and unexpected job difficulties is detailed in reference 2 and is outlined below. Additionally, the root cause for the NOV associated with the as low as reasonably achievable (ALARA) worksheet is also outlined below:

A.1 Failure to route a pre-job ALARA work sheet for Radiation Work Permit (RWP) 1995-1093 to the appropriate craft for completion.

Root Cause: The reason the pre-job ALARA work sheet was not routed for craft review was an error in judgment which resulted in a procedure violation. The BWNT supplied ALARA plan was judged to contain sufficient information to satisfy the intent of the pre-job ALARA work sheet, therefore, a determination was made that a contractor work force review was unnecessary.

A.2 During the removal and replacement of the Unit 1 CSA, four individuals involved in this task did not terminate the entry despite dosimeters alarming on accumulated dose and unexpected job difficulties.

Root Cause: Job termination expectations were inadequate. This included the failure to establish an adequate control authority and appropriate communications; contingency considerations were not adequately addressed; termination criteria specifics were not established; competing elements (HP instructions to leave the area and training to never leave a heavy load suspended) created conflicting considerations relative to determining safe conditions; and some HP instructions were ineffective.

(2) Corrective steps taken and results achieved:

A.1 Procedure 1012.019, *Radiation Work Permits*, was revised to ensure that ALARA plan requirements are included in the appropriate field document.

A memorandum was issued to the ALARA staff re-enforcing expectations for the proper use of the pre-job ALARA worksheet.



- A.2 Implemented an HP pre-job checklist to ensure that key elements such as the following are considered: job termination criteria are clearly defined; how to terminate the job; designation of HP and craft leads; contingency actions; and establishment of communications.

Health Physics, HP Contractor and General Employee Training (GET) programs were revised to increase emphasis on role and authority of HP personnel to "Stop Work" during radiological events.

The CSA event, including stop work expectations, was discussed with BWNT field service employees.

(3) Corrective steps that will be taken to prevent further violations:

- A.1 The ALARA pre-job checklist will be revised prior to the Unit 2 refueling outage currently scheduled for the Fall of 1995, to ensure review of the pre-job ALARA worksheet by the appropriate craft and ALARA staff.

An assessment of the pre-job ALARA worksheet for human factors considerations and effectiveness will be performed during the ANO Units 1 and Unit 2 refueling outages which are currently scheduled for the Fall of 1996 and the Fall of 1995, respectively.

- A.2 Corrective actions have been completed.

(4) Date when full compliance will be achieved:

- A.1 Full compliance will be achieved when procedure 1012.019 is revised prior to the Unit 2 refueling outage currently scheduled for the Fall of 1995, to enhance the pre-job ALARA checklist
- A.2 Full compliance was achieved on June 14, 1995, when the HP pre-job checklist was implemented.

B. Response to violation:

(1) Reason for the violation:

The root causes for the NOV associated with the infrequently performed test or evolution (IPTE), Pre-Job Briefings, and refueling transfer canal water level are detailed in reference 2 and are outlined below:

- B.1 Procedure 1402.055, *Removal and Replacement of the Core Support Assembly*, was not identified as an IPTE in accordance with Procedure 1000.143, *Control of Infrequently Performed Tests or Evolutions*.

Root Cause: The root cause of this condition was determined to be personnel error. The procedure writer did not recognize that Procedure 1402.055 should have been classified as an IPTE.

- B.2 Prior to the removal and replacement of the Unit 1 CSA, a complete briefing including all personnel involved with the replacement of the CSA was not conducted.

Root Cause: The individuals involved in the replacement of the CSA were provided an ALARA briefing. Since this evolution was not considered to be an IPTE, the ALARA briefing was acceptable for that situation. If the evolution had been classified as an IPTE, then a pre-job briefing with involved personnel would have been required.

- B.3(1) Failure to establish the required fuel canal water level prior to moving the CSA which resulted in a highly irradiated section of the core support assembly being lifted above the surface of the water and higher than expected dose rates and accumulated doses for personnel involved in the activity.

Root Cause: A CSA installation procedural pre-requisite step required that the fuel transfer canal (FTC) water level be verified at the "normal water level" for refueling activities. The normal refueling water level elevation value was not specified in the CSA installation procedure. Additionally, the responsibility for verification of the CSA installation pre-requisites was delegated to a contractor who was not appropriately sensitive to procedural requirements for FTC water level elevation.

- B.3(2) Procedure 1402.055 was inadequate in that it did not incorporate radiation dose reduction provisions to prohibit raising the hold-down bolt area of the CSA above an established normal fuel transfer canal water level.

Root Cause: There was no established method in place to incorporate ALARA plan information into field documents. The ALARA plan format implied that the contractor was responsible for controlling this portion of the evolution. The ANO ALARA plan reviewers did not recognize the need to incorporate this aspect into the ANO process.

(2) Corrective steps taken and results achieved:

- B.1 Procedure 1402.055 was classified as an IPTE and revised to include critical CSA movement attributes, i.e. minimum and maximum lift heights, cautionary statements concerning bolt region exposure, FTC water level elevation limits.

A Quality Assurance (QA) audit of ANO procedures for IPTE applicability was performed.

Unit 1 and Unit 2 Maintenance procedures and refueling path procedures assigned to Maintenance, Outage Management, and Design Engineering were reviewed by a multi-discipline team to assure proper IPTE classifications.

Procedure 1000.143, *Control of Infrequently Performed Tests or Evolutions* was revised to emphasize communication and job termination criteria.

Refresher training was provided to applicable procedure writers on the IPTE process.

- B.2 No corrective actions were identified for this area.
- B.3 A process to incorporate ALARA plan requirements into field documents was implemented.

The Unit 1 CSA removal and installation refueling task was designated as an IPTE and was revised to include cautionary statements regarding CSA bolt ring region exposure.

The responsibility for Unit 1 refueling path procedures was shifted to Outage Management.

(3) Corrective steps that will be taken to prevent further violations:

B.1 A database to identify IPTE procedures will be developed by October 16, 1995.

B.2 A method to flag IPTE and other critical briefings in the outage schedule will be developed by May 3, 1996.

Periodic assessments will be performed to determine the effectiveness of IPTE briefs during 1R13 and 2R11, currently scheduled for the Fall of 1996 and the Fall of 1995, respectively.

B.3 The appropriate Unit 2 refueling path procedures will be revised prior to the ANO Unit 2 refueling outage 2R11, currently scheduled for the Fall of 1995, to include:

- Proper IPTE designation
- Specific fuel transfer canal water level
- ANO sign off of initial conditions/prerequisites

The Unit 1 and 2 refueling procedures will be evaluated for lessons learned from the CSA event prior to refueling outages 1R13 and 2R11 currently scheduled for the Fall of 1996 and the Fall of 1995, respectively.

In future outages, Unit 1 ANO refueling supervisors will be utilized during the entire refueling path verses fuel movement only.

The Unit 1 and Unit 2 Operations, Outage Management, and HP departments will evaluate existing fuel transfer canal water level controls prior to refueling outages 1R13 and 2R11 currently scheduled for the Fall of 1996 and the Fall of 1995, respectively. Consideration will be given to the necessary level for non-fuel components such as CSA, plenum, and incore detectors.

(4) Date when full compliance will be achieved:

Full compliance will be achieved prior to refueling outages 1R13 and 2R11, currently scheduled for the Fall of 1996 and the Fall of 1995, respectively.

C. Response to violation:

(1) Reason for the violation:

The root cause for the NOV associated with the failure to approve an overtime extension is detailed in reference 2 and outlined below:

- C. Personnel directly involved in the replacement of the core support assembly worked between 19 and 20 hours straight without the approval of the Unit 1 Plant Manager.

Root Cause: The root cause of this condition was personnel error. The requester did not ensure that approval to exceed overtime limits had been given. One contributing cause was determined to be miscommunication, in that the BWNT workers were notified that they had approval to exceed the 72 hour overtime limit. The other contributing cause was that the overtime extension request form lacked human factor elements for ease of use and understanding.

(2) Corrective steps taken and results achieved:

- C. A memorandum was issued designating approval authority for overtime extensions.

A multi-discipline team reviewed the overtime policy and recommended enhancements. As a result, the overtime policy, and associated forms were revised based on the recommended enhancements. This new policy was communicated to supervisors and above.

GET training was revised to include a discussion on the overtime policy and approval process.

(3) Corrective steps that will be taken to prevent further violations:

- C. QA will assess the effectiveness of selected corrective actions during refueling outages 1R13 and 2R11 scheduled for the Fall of 1996 and the Fall of 1995, respectively.

(4) Date when full compliance will be achieved:

- C. ANO is currently in compliance with ANO Unit 1 Technical Specification 6.2.2.1.