

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/91031(DRP)

Docket No. 50-454

License No. NPF-37

Licensee: Commonwealth Edison Company
Opus West III
1400 Opus Place
Downers Grove, IL 60515

Meeting Conducted: December 19, 1991

Meeting At: NRC Regional Office, Glen Ellyn, Illinois

Type of Meeting: Enforcement Conference

Facility Name: Byron Nuclear Power Station, Unit 1

Approved By: *M. L. Farber*
M. L. Farber, Chief
Projects Section 1A

1/8/92
Date

Meeting Summary

Enforcement Conference on December 19, 1991 (Report No. 50-454/91031)

Areas Discussed: A review of the apparent violation and areas of concern identified during the inspection, and corrective actions taken or planned by the licensee. The enforcement options pertaining to the apparent violations were also discussed with the licensee.

DETAILS

1. Persons Present at the Conference

Commonwealth Edison Company

M. J. Wallace, Vice President-PWR Operations
E. D. Eenigenburg, PWR General Manager
T. Kovach, Nuclear Licensing Manager
R. Pleniewicz, Station Manager-Byron
M. Burgess, Technical Superintendent
G. A. Denenberg, Compliance Engineer
T. K. Higgins, Assistant Superintendent-Operations
T. Schuster, Nuclear Licensing Administrator
P. Barnes, Compliance Supervisor
D. Saccomando, Compliance Engineer
D. Robinson, Onsite Nuclear Safety Administrator
M. Willoughby, Safety Assessment
A. Bonnell, Shift Engineer
B. W. Quigley, Shift Foreman
B. Milner, Station Control Room Engineer
J. McDougal, Nuclear Station Operator
R. Wegner, Op. Engineer
E. Fuerst, Nuclear Operations Staff
P. Steptoe, Lawyer

U.S. Nuclear Regulatory Commission

W. L. Forney, Deputy Director, Division of Reactor Projects (DRP), (RIII)
B. Clayton, Chief, Branch 1, DRP, RIII
M. J. Farber, Chief, Section 1A, DRP, RIII
W. J. Kropp, Senior Resident Inspector-Byron
C. N. Weil, Enforcement Specialist, RIII
C. N. Orsini, Reactor Engineer, DRP, PIII
B. A. Berson, Regional Counsel

2. Enforcement Conference

An enforcement conference was held at the NRC Regional Office, Glen Ellyn, Illinois on December 19, 1991. This conference was conducted as a result of the preliminary findings of inspections during which apparent violations of NRC regulations and license conditions were identified. Inspection findings are documented in Inspection Reports No. 50-454/91026(DRP); 50-454/91026(DRP), and 50-454/91027(DRP), transmitted to the licensee by letters dated December 12, 1991 and December 10, 1991 respectively.

The purpose of this conference was to (1) discuss the apparent violations, causes, and the licensee's corrective actions; (2) discuss several areas of concern; (3) determine if there were any escalating or mitigating circumstances; and (4) obtain any information which would help determine the appropriate enforcement action. The NRC presented the apparent violations and concerns.

The licensee's representatives did not contest any of the apparent violations and were in agreement with the NRC's understanding of the areas of concern. The licensee's representatives described the events which led to the violations, including root causes and corrective actions taken. The licensee presentation slides are attached to this report. In summary, the corrective actions were both broad based long-term and specific near-term actions as described in the attachment.

At the conclusion of this meeting, the licensee was informed that they would be notified in the near future of the final enforcement action.

Attachments: As stated

DECEMBER 19, 1991

BYRON ENFORCEMENT CONFERENCE

MODE 5 TO 4 CHANGE WITH
CONTAINMENT SPRAY INOPERABLE

AGENDA

INTRODUCTION

M. WALLACE

EVENT CHRONOLOGY

T. HIGGINS

EVENT CAUSES/
CORRECTIVE ACTIONS

R. PLENIEWICZ

SUMMARY

R. PLENIEWICZ

INTRODUCTION

- Mode change was made with the containment spray system inoperable
- Performance did not meet management's expectations
- A thorough review of the event was performed
 - The event resulted from personnel error and unclear procedural steps
 - Unit 2 activities had minimal impact on Unit 1
- Corrective actions are broad, comprehensive and directed at continuous improvement

EVENT CHRONOLOGY

MODE 5 TO 4 PROCESS CONTROLS

ON-SITE REVIEW

This is a technical review to ensure plant readiness for mode change. In addition to general startup requirements, specific items unique to the outage are reviewed. This includes work requests, surveillances, modifications and deviation reports. The review documents requirements that must be completed prior to a mode change. The Mode Change Checklist used by operations (1BGP 100-1T2) contains a sign-off to ensure completion of the On-site Review requirements.

PROCEDURE 1BGP 100-1, PLANT HEATUP

1BGP 100-1 contains the steps necessary for plant heatup from Mode 5 (cold shutdown) to Mode 3 (hot standby). The procedure is accomplished over several days to ready the systems for a mode change. The procedure contains several attachments/checklists to facilitate plant heatup.

- 1BGP 100-1T1, Flowchart

This Flowchart is a graphical representation of the order in which steps of 1BGP 100-1 may be performed. As the steps are completed in the procedure they are initialed on the flowchart.

- 1BGP 100-1T2, Mode 5 to 4 Checklist

The Mode 5 to 4 Checklist provides a listing of standard items to be reviewed and resolved prior to the mode change. Some of the items reviewed include the Out of Service (OOS) Log, System Lineups and a review of the Master OOS Board one hour prior to the anticipated mode change.

EVENT CHRONOLOGY (CONTINUED)

MODE 5 TO 4 PROCESS CONTROLS (CONTINUED)

- 1BGP 100-1T4, System Lineup Checklist

The System Lineup Checklist cites specific system lineup procedures and a schedule for performance to ensure appropriate system configuration for the mode change. The checklist is used to verify completion of the individual lineup procedures.

- BOP CS-E1, Containment Spray System Electrical Lineup

BOP CS-E1 is used to document the lineup of breakers and switches in the containment spray system.

- BAP 340-2T2, System Lineup Discrepancy/Action Sheet

BAP 340-2T2 is used to document specific lineup discrepancies and the actions necessary for component restoration.

BYRON UNIT 1 MODE 5 TO 4 CHANGE WITH CONTAINMENT SPRAY INOPERABLE

OCTOBER 1991

22 | 23 | 24 25 26 | 27 |

| 28 |

	22	23	24	25	26	27	28
0	1	1	1	1	1	1	1
8	4	4	4	5	6	6	9
0	0	0	4	0	3	4	0
0	0	0	0	0	0	0	0

POD MEETING
SF SCORE SE T/O's

NSO T/O
SF SCORE SE T/O's

COMMON

CS ELECT L/U

MODE CHANGE PAPERWORK INITIATED

DSR

STEP 005 LOG qb

STEP 11 MASTER OOS BOARD

STEP 9H OOS LOG

MODE CHANGE

SF ID's CS OOS

CS RTS

UNIT 2

RCS LEAK UE

UNIT S/D ISOLATED

LEAK RATE CALC OK

UE TERMINATED

0	0	1	1	1	1	1	1
1	9	1	6	6	6	7	7
5	5	5	0	0	0	0	0
4	9	2	3	3	3	3	8

EVENT CHRONOLOGY (CONTINUED)

- 10/22/91 Actions were underway to return Unit 1 to service.
- BOP CS-E1 'Containment Spray System Electrical Lineup Checklist' was completed by operations. The CS pump breakers were noted as OOS on the BAP 340-2T2 Discrepancy Sheet. It was noted that the CS pumps would be restored to service per 1BGP 100-1 step 28a. The action step was signed off by the operators.
- (NOTE: Step 28a reads "RETURN TO SERVICE CS Pumps 1A and 1B, and Take out of PULL-OUT position.")
- 10/23/91 1BGP 100-1, Flowchart initiated by the Shift Engineer (SE). Because the process takes several days, the flowchart was maintained under the glass at the NSO's desk.
- 10/24/91 On-site Review 91-163, Byron Unit 1 Mode 5 to Mode 4 On-Site Review was completed. A listing of items to consider prior to mode change was provided to operations.
- 10/27/91
1:54 am A RCS leak on Unit 2 could not be identified resulting in the shutdown of the unit. A controlled shutdown was initiated and an unusual Event was declared.
- 10/27/91
8:00 am Plan of the Day Meeting held. Priorities established for the day included:
1. Complete Unit 2 Shutdown
 2. Unit 2 Leak Identification and Isolation
 3. Move Unit 1 to Mode 4
 4. Unit 2 Startup and Return to Service
- 10/27/91
9:59 am Unit 2 shutdown completed.

EVENT CHRONOLOGY (CONTINUED)

- 10/27/91 8:00 am to 2:45 pm 1BGP 100-1T2, Mode 5 to 4 Checklist Step 9b, a review of the OOS Log was done by the Shift Foreman (SF). He recognized that an OOS had not been removed for the CS pumps and the 1SI8811A/B valves.
- The Unit 1 SF discussed these OOS's with the Outage Coordinator, dayshift SE and another SF. After reviewing 1BGP 100-1, it was determined that step 28a would clear the OOS. Step 9b of the mode change checklist was signed off by the SF.
- 10/27/91 11:52 With Unit 2 in Mode 3, the RCS leak was isolated. Leak rate calculations began.
- 10/27/91 2:00 pm to 3:00 pm The dayshift SE, SCRE and SF turned over to the afternoon shift. The day shift SCRE remained to assist with Unit 2 and the dayshift SF remained to assist in completion of the mode change checklist.
- (NOTE: The Unit NSO and extra NSO continue their scheduled shift).
- 10/27/91 4:03 pm RCS leak rate surveillance results for Unit 2 are acceptable.

EVENT CHRONOLOGY (CONTINUED)

- 10/27/91 4:30 pm 1BGP 100-1T2, Mode 5 to 4 Checklist Step 11, a review of the Master OOS Board was done by the dayshift SF and verified by another SF. The dayshift SF again recognized that the OOS had not been removed for the CS pumps. No exception was documented. The dayshift SF still believed that 1BGP 100-1 step 28a would clear the OOS.
- 10/27/91 4:40 pm 1BGP 100-1T2, Mode 5 to 4 Checklist Step 9b, a review of the OOS Log, was done by SE and the step signed off. The OOS on the CS pumps was not recognized as an exception for the mode change.
- 10/27/91 4:41 pm 1BGP 100-1T2, Mode 5 to 4 Checklist Step 16, authorization for changing modes from 5 to 4 was signed off by the SE.
- 1BGP 100-1 step 28a had not been performed. The 1BGP 100-1T2, Mode 5 to 4 Checklist did not have a step requiring completion of the 1BGP 100-1T1 flowchart nor did it refer the user back to the appropriate 1BGP 100-1 procedural step.
- 10/27/91 4:55 Mode 4 was entered on Unit 1.
- 10/27/91 5:08 Unit 2 Unusual Event was terminated.

EVENT CHRONOLOGY (CONTINUED)

- 10/27/91 7:00 pm Unit 1 NSO turnover. The OOS on the CS pumps was not recognized as a deficiency during the NSO's panel walkdown.
- 10/27/91 10:05 pm Unit 1 SF turnover took place.
- 10/27/91 10:30 pm SCRE shift turnover took place.
- 10/27/91 11:00 pm SE shift turnover took place. It is expected that the SE and SCRE will tour the main control room and visually inspect the control boards as soon as possible after shift relief. The SE and SCRE had not initiated their tours prior to the SF's identification of the error.
- 10/27/91 11:30 pm Following turnover, while in the control room, the SF identified that the CS pumps were OOS. The applicable LCO was entered.
- 10/28/91 12:14 am The CS pumps were returned to service and the LCO exited.
- 10/28/91 12:17 am The NRC was notified via the ENS red phone.

EVENT CAUSES

- Personnel Error
 - Inadequate awareness of/use of procedures
 - Inadequate communications

- Ineffective Implementation of procedures
 - Procedure clarity
 - Understanding of/training on portions of procedures

SAFETY SIGNIFICANCE

CECo concurs with the NRC's conclusion that the technical safety significance of the event was minimal.

- Unit being returned from refuel outage; minimal decay heat
- Low RCS temperature
- The CS pumps and SI valves were functional and could be quickly returned to service

However, the event did reveal certain deficiencies in procedural implementation and personnel performance. This required detailed review, evaluation of established barriers and focused corrective actions.

CORRECTIVE ACTIONS

1. Personnel involved in the event were counselled with respect to management's performance expectations including procedural adherence, communications and documentation of reviews.

Appropriate disciplinary action has been taken.

(Note: Corrective actions 2-5 will be completed prior to the startup of Unit 2 from the upcoming refuel outage [approximately May 1, 1992]. Should conditions arise which require use of mode change procedures prior to completion of the actions, additional management oversight will be provided for mode change activities.)

2. The Operations Training Group is developing for licensed operators a table top scenario on mode changes. The lesson plan will include procedures and activities that must be completed prior to a mode change. The training will be completed by April 3, 1992.
3. The Training Department will evaluate infrequently performed tasks to ensure they are trained on periodically and as dictated by plant conditions. This evaluation will be performed during the first quarter of 1992.
4. INPO Team Training had been scheduled to start in January 1992. This training, focused on team skills, consists of both classroom and simulator scenarios that utilize the total team concept. All operations shift personnel from the B-Man up through the SE are scheduled to receive this training.

CORRECTIVE ACTIONS (CONTINUED)

5. Relevant procedures will be reviewed by the Human Factors Engineer and appropriately revised/enhanced:
 - BGP's will be revised:
 - The current mode change step will be made two steps:
 - The first step will indicate SRO permission to proceed with the mode change based on:
 - Review of applicable On-site Review
 - Completion of BGP steps and flowchart
 - Shift meeting conducted to review plant status
 - Mode Change Checklist signed
 - The second step will indicate that the NSO has:
 - Verified required surveillances in progress/completed
 - Performed required actions to complete mode change
 - Mode change completed and logged
- FLOWCHARTS for mode change will be clarified with respect to level of signature authority and better distinction of SRO/RO steps.
- MODE CHANGE CHECKLISTS will be revised to:
 - Create a log sheet for performance of one hour checks prior to mode change
 - Create a Discrepancy Sheet Attachment
 - Clarify step 11 on the Master OOS Board review
- BAPs will be revised:
 - Turnover procedures for the SCRE and NSO will be revised to require identification of major procedures/steps in progress.
 - The procedure on use of Mode Change Checklists will be revised to assign overall flowchart responsibility to the SCRE.

SUMMARY

- Mode change was made with both CS pumps OOS electrically:
 - Caused by personnel error compounded by procedural understanding
 - SCRE/NSO changed modes prior to completion/signoff of procedural steps
 - SF/SE failed to ensure the CS pump OOS was cleared prior to mode change
 - Steps in the Mode Change Checklist were not clear

- The NSO's turnover panel walkdown was not effective.

- Unit 2 activities had minimal impact on the Unit 1 heatup.

- The event had minimal technical safety significance; but we view the event seriously.

- Corrective actions specific to the event are being implemented. Additional actions are being taken to address other mode change procedures.

- We have learned from this event and will continue to strive for excellence in operations.