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**United States  
Nuclear Regulatory**

**Office of Invest**

Reported by OI:

9511300048 951113  
PDR FOIA  
PATTERS95-262 PDR

Title: COOPER NUCLEAR STATION:

ALLEGED DELIBERATE VIOLATION OF TECHNICAL SPECIFICATION

Licensee:

Nebraska Public Power District  
P.O. Box 499  
Columbus, Nebraska 68601

Docket No.: 50-298

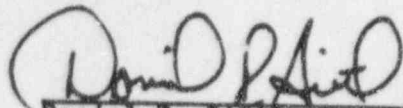
Case No.: 4-93-020R

Report Date: July 14, 1994

Control Office: OI:RIV

Status: CLOSED

Reported by:



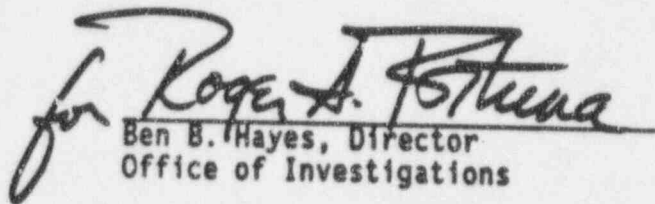
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for Roger A. Postema  
Ben B. Hayes, Director  
Office of Investigations

~~WARNING~~

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## SYNOPSIS

On June 17, 1993, an investigation was initiated to determine whether Nebraska Public Power District's (NPPD) Cooper Nuclear Station (CNS) technical specifications (tech specs) had been deliberately violated on March 9 and 10, 1993, when during the Reactor Pressure Vessel (RPV) disassembly, the RPV head, dryer, and separator were moved over irradiated fuel without secondary containment.

CNS tech specs prohibit the movement of any load over irradiated fuel that, if dropped, would hit and damage the fuel, unless secondary containment is operable. Additionally, CNS procedures specifically prohibited the movement of the RPV head, dryer, and separator, respectively, without first establishing secondary containment.

During the March 1993 refueling outage, secondary containment could not be established. The testimonial and documentary evidence developed by this investigation reflects that CNS issued new procedures that deleted the secondary containment requirements without regard to the requirements set forth in the tech specs. CNS then moved the head, dryer, and separator over irradiated fuel, without secondary containment. The evidence reflects that the tech spec was violated through the careless-disregard by the senior management of CNS.

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~~ACCOUNTABILITY~~

The following portions of this Report of Investigation (Case No. 4-93-020R) will not be included in the material placed in the PDR. They consist of pages 3 through 83.

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APPLICABLE REGULATIONS

Allegation: Alleged Deliberate Violation of a Technical Specification

Requirement of License:

10 CFR 50.10: License Required (1993 Edition)

(a) Except as provided in 50.11, no person within the United States shall transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, or use any production or utilization facility except as authorized by a license issued by the Commission.

10 CFR 50.36: Technical Specifications (1993 Edition)

(2) Limiting conditions for operations. Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met. When a limiting condition for any process step in the system of a fuel reprocessing plant is not met, the licensee shall shut down that part of the operation or follow any remedial action permitted by the technical specifications until the condition can be met. In the case of a nuclear reactor not licensed under 50.21(b) or 50.22 of this part or fuel reprocessing plant, the licensee shall notify the Commission, review the matter, and record the results of review, including the cause of the condition and the basis for corrective action taken to preclude recurrence. The licensee shall retain the record of the results of each review until the Commission terminates the license for the nuclear reactor or the fuel reprocessing plant. In the case of nuclear power reactors licensed under 50.21(b) or 50.22, the licensee shall notify the Commission if required by 50.72 and shall submit a Licensee Event Report to the Commission as required by 50.73. In this case, licensees shall retain records associated with preparation of a Licensee Event Report for a period of three years following issuance of the report. For events which do not require a Licensee Event Report, the licensee shall retain each record as required by the technical specifications.

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LIST OF INTERVIEWEES

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## DETAILS OF INVESTIGATION

### Purpose of Investigation

On June 17, 1993, an investigation was initiated to determine whether Nebraska Public Power District's (NPPD) Cooper Nuclear Station (CNS) technical specifications (tech specs) had been deliberately violated on March 9 and 10, 1993, when during the Reactor Pressure Vessel (RPV) disassembly, the RPV head, dryer, and separator were moved over irradiated fuel without secondary containment.

### Background

On July 18, 1991, CNS approved Procedure Change Notices (PCN) 7.4.4, Revision No. 19 and 7.4.5, Revision No. 17. On October 3, 1991, CNS approved PCN 7.4.6, Revision No. 18. These three PCNs added the requirement to have secondary containment established before moving the RPV head, dryer, and separator, respectively, during RPV disassembly. This requirement, as instituted in the PCNs by CNS, added the step to ensure secondary containment be established before moving loads over irradiated fuel.

The NPPD Proposed Change No. 68 to CNS tech specs was sent to the NRC by letter dated July 18, 1991. NPPD proposed to revise Section 3.7.C.1.d. on page 166 of the CNS tech specs. This revision added the language "and no loads which could potentially damage irradiated fuel are being moved in the secondary containment" as a condition for determining whether secondary containment is required. NPPD also included similar language in Section 3.7.C.1.e.b., to direct suspension of load movements that could potentially damage irradiated fuel in the secondary containment. NPPD requested NRC approval of Proposed Change No. 68 before the next refueling outage, scheduled to commence in October 1991.

The NRC approved this proposed change by issuing Amendment 147, consisting of NPPD's proposed changes to tech specs, via a letter dated October 18, 1991. Amendment 147 became part of the Facility Operating License No. DPR-46 for CNS. The CNS tech specs then required secondary containment be established before moving "loads which could potentially damage irradiated fuel." Further, if such secondary containment integrity could not be maintained, the movement of loads that could potentially damage irradiated fuel would be suspended.

On March 9, 1993, during the CNS outage, and before RPV disassembly, CNS determined that secondary containment could not be established. On March 9, 1993, CNS initiated, reviewed, and approved PCNs 7.4.4, Revision No. 20; 7.4.5, Revision No. 18; and 7.4.6, Revision No. 19. These three PCNs deleted the requirement for secondary containment when moving the RPV head, dryer, and separator over irradiated fuel. On March 9 and 10, 1993, CNS performed RPV disassembly without secondary containment and reported that secondary containment was established on March 11, 1993.

In March 1993, the Nuclear Regulatory Commission (NRC) Shutdown Risk and Outage Management Inspection Team became aware that CNS had several problems during their first week of refueling outage. At the request of the NRC, CNS provided a list of six events which included the failure of a secondary containment test. The NRC inspection determined that, in addition to failing a secondary containment test, CNS had changed procedures and moved the RPV head, dryer, and separator over irradiated fuel without establishing secondary containment. The NRC inspection team later determined that CNS violated their tech specs with the movement of these loads without secondary containment. The matter was then given to NRC Region IV (RIV) and subsequently referred to the Office of Investigations, Region IV (OI:RIV).

Based on the information provided by this inspection team, an investigation was initiated on June 17, 1993 (Exhibit 1). The investigation was to determine whether CNS had deliberately violated their tech specs by moving the RPV head, dryer, and separator over irradiated fuel without establishing secondary containment.

#### Coordination with the NRC Staff

Elmo COLLINS, Project Engineer, Division of Reactor Projects (DRP), RIV, provided technical assistance throughout this investigation and participated in a significant number of the interviews conducted during this investigation.

#### Documentation Review

During this investigation, OI:RIV obtained and reviewed numerous documents provided by CNS, General Electric (GE), and the NRC. The following documents are exhibited with this report.

#### William O. LONG Memorandum, dated March 28, 1988 (Exhibit 2)

LONG, NRC Project Manager, Project Directorate IV, prepared this memorandum for Docket File No. 50-298 (CNS). LONG documented his interaction with Rick BENNETT, former NRC Senior Resident Inspector at CNS, Joe CALLAN, former Director, DRP:RIV, and Kim WALDEN, NPPD Manager of Licensing and Nuclear Safety. LONG provided written reference to his interpretation of CNS tech spec 3.7.C.1. LONG opined, based on the applicability of the requirements of CNS tech specs 4.7.C.1.d and 3.7.C.1.a through d, a secondary containment test need not be performed until immediately before handling of irradiated fuel. This document will be called the LONG memorandum throughout this report.

#### NRC Inspection Report 50-298/88-07, dated May 11, 1988 (Exhibit 3)

This document includes the NRC transmittal letter to NPPD, dated May 11, 1988, and the inspection report for the March 1, 1988, through April 15, 1988, inspection. This inspection was conducted by BENNETT and E. A. PLETTNER, former Resident Inspector. On page 9, item 9, second paragraph, the inspection report addresses secondary containment during RPV disassembly.

which reconfirms LONG's memorandum that secondary containment need only be maintained before fuel movement.

GE Potentially Reportable Condition (PRC) 88-11, dated October 17, 1988 (Exhibit 4)

This document reflects a GE tech spec review for the Boiling Water Reactor (BWR) Owner's Group. PRC 88-11 notified BWR owners that it was necessary for them to assess their facility to determine if there was a problem with moving loads over irradiated fuel.

GE had determined that tech specs would not restrict movement of loads over the core or fuel storage pool during Operational Condition 4 [cold shutdown]. Additionally, tech specs would not restrict movement of nonirradiated loads during Operational Condition 5 [refueling]. Further, such loads, if dropped, could result in an unanalyzed event.

GE recommended this event be evaluated on a plant specific basis. GE also recommended that existing plant tech specs and procedures be reviewed to ensure adequate controls exist. GE continued, in the event secondary containment integrity does not exist or the Standby Gas Treatment System (SGTS) is not operable, the plant should determine if mechanical or electrical stops or interlocks are in place to prevent crane movement over irradiated fuel.

GE stated that if this event applies to the plant, they should revise tech specs or plant procedures. These tech specs or procedures should prevent movement of loads heavier than a defined value [document does not specify weight] over irradiated fuel when secondary containment does not exist or SGTS is inoperable.

NPPD Memorandum, CNSS888353, dated December 7, 1988 (Exhibit 5)

This NPPD internal memorandum was written by CNS Engineer Richard W. FOUST, to his supervisor, Paul L. BALLINGER, in response to GE PRC 88-11. FOUST restates GE's concern and their recommendation and offers his evaluation of the issue.

FOUST wrote that because the maximum acceptable load is not known, station procedures should be revised to prohibit movement of any objects over irradiated fuel. FOUST specific recommendations included the revision of applicable 10.xx and 7.4xx series procedures. The recommended procedures require control room verification of secondary containment integrity before movement of ~~objects over~~ irradiated fuel.

PCN 7.4.4, Revision No. 19, dated September 7, 1990 (Exhibit 6)

This PCN was initiated on September 7, 1990, and required the shift supervisor to verify secondary containment had been established before removing the RPV head. This PCN was in the review stage for approximately 10 months until



approved by the CNS Station Operation Review Committee (SORC) meeting on July 18, 1991. GE PRC 88-11 was shown as the reference document used as the basis for this PCN. This PCN also added NRC NUREG 0612 in a new step in the procedures for CNS Codes and Standards.

PCN 7.4.5, Revision No. 17, dated September 7, 1990 (Exhibit 7)

This PCN was also initiated on September 7, 1990. This PCN required the shift supervisor to verify that secondary containment is established before moving the RPV dryer. This PCN was approved by the SORC meeting on July 18, 1991. GE PRC 88-11 was shown as the reference document used as the basis for this PCN. NUREG 0612 was added in a new step in the procedures for CNS Codes and Standards.

PCN 7.4.6, Revision 18, dated July 16, 1991 (Exhibit 8)

This PCN was initiated on July 16, 1991, 2 days before the SORC meeting approval of the two above related PCNs. This PCN also required the shift supervisor to verify secondary containment is established before moving the RPV separator. The SORC meeting approved this PCN on October 3, 1991. No reference document is shown on this PCN. The box CNS Experience is checked as the basis for this PCN.

NPPD Proposed Change No. 68 to CNS Tech Specs, dated July 18, 1991 (Exhibit 9)

NPPD requested several changes in this proposal to the CNS tech specs. NPPD requested NRC approval of these changes by October 1991 so they could be implemented during the next planned outage. The date of this proposal is the same date [July 18, 1991] the SORC meeting approved two of the PCNs to require secondary containment during RPV disassembly.

One of the changes proposed [on page 3 of the attachment to the proposal] was to revise Section 3.7.C.1.d which is on page 166 of CNS tech specs. NPPD proposed to add "and no loads which could potentially damage irradiated fuel are being moved in the secondary containment" as a condition for determining whether secondary containment is required. Specifically, if a load was being moved that could potentially damage irradiated fuel if dropped, then secondary containment is required.

NPPD also proposed similar language be included in the loss of secondary containment action statement, Section 3.7.C.1.e.b. Specifically, it directed the suspension of load movement that could potentially damage irradiated fuel if secondary containment integrity could not be maintained.

NRC Issued Amendment 147 to CNS, dated October 10, 1991 (Exhibit 10)

By a letter dated October 10, 1991, the NRC issued Amendment 147 to CNS. The NRC approved changes to CNS tech specs in response to NPPD's application dated July 18, 1991 [Proposal No. 68]. Because of their changes, CNS was now required to maintain secondary containment when moving loads over irradiated

fuel that could potentially damage irradiated fuel if dropped, and if secondary containment could not be established and maintained, such load movement would be suspended until secondary containment was established.

NPPD Proposed Change No. 95 to CNS Tech Specs, dated July 19, 1991  
(Exhibit 11)

One of the changes included in this proposal was to address an apparent conflict between Surveillance Requirement 4.1.C.1.c and 4.7.C, BASES. This tech spec addresses the performance of tests to determine secondary containment ability to maintain a quarter inch water vacuum before refueling.

INVESTIGATOR'S NOTE: BASES is part of CNS tech specs in that it provides amplification of the Limiting Conditions for Operation (LCO) and surveillance requirements.

In this situation, CNS proposed to have the BASES amended to agree with the surveillance requirement. Specifically, CNS requested the third sentence of the BASES be deleted that addressed the performance of tests to demonstrate secondary containment before primary containment is opened for refueling. The surveillance requirement did not require a secondary containment test before opening primary containment. The tech specs were not changed in this proposal, but the BASES was amended to agree with the surveillance requirements of the tech spec.

NPPD noted this recommendation was based on the recommendation from the NRC Project Director [Long memorandum] dated March 28, 1988 (Exhibit 2).

NRC Issued Amendment 150 to CNS, dated November 22, 1991 (Exhibit 12)

By a letter dated November 22, 1991, the NRC issued Amendment 150 to CNS. This amendment was based on the NPPD application dated July 19, 1991, and included the change to the BASES of 4.7.C of CNS tech specs. The surveillance requirement did not require a secondary containment test before opening primary containment and this amendment changed the BASES to agree with the surveillance requirement.

Temporary PCN 7.4.4, dated March 8, 1993 (Exhibit 13)

Temporary PCN (TPCN) 93-047 addressed the RPV head. Specifically, it removed step 7.4 from the prerequisites and inserted it into step 8.1.27. This temporary ~~change~~ allowed the RPV head bolts to be detensioned without establishing ~~secondary~~ containment. Before this temporary change, secondary containment ~~had~~ to be established before detensioning the RPV head bolts according to Procedure ~~7.4.4~~.

PCN 7.4.4, Revision No. 20, dated March 9, 1993 (Exhibit 14)

This PCN was initiated, reviewed, and approved on March 9, 1993, and it addressed the RPV head removal. This PCN removed the requirement for

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secondary containment during RPV disassembly. It references TPCN 93-047 (Exhibit 13) and Item 5, on page 1, was checked "yes" to reflect this PCN involved a change to tech specs. Item 5 further shows Amendments 147 and 150 as prior NRC approval of this change. Item 8, on page 2, shows the justification for this change. Item 8.4 reflects this change was to make the loads that were moved over irradiated fuel, be in accordance with NUREG 0612 instead of PRC 88-11 (Exhibit 4).

In this PCN, Item 8.6 notes that secondary containment requirements have been deleted and tech spec Amendments 147 and 150 (Exhibits 9 and 11) removed the requirements to demonstrate secondary containment capability before the primary containment is opened for refueling. It further refers to the NRC inspection report 88-07 (Exhibit 3) response.

This same item notes a record of a telecon [telephone conference] from GE, dated March 9, 1993 (Exhibit 17). The telecon stated PRC 88-11 only addressed concerns with loads of 750 pounds or less, and heavier loads are addressed in their [CNS] response to NUREG 0612.

PCN 7.4.5, Revision No. 18, dated March 9, 1993 (Exhibit 15)

This PCN removed the requirement for secondary containment when moving the RPV steam dryer during RPV disassembly. This PCN was initiated, reviewed, and approved on March 9, 1993, and no reference document is shown on this PCN. This PCN also reflects it involves a tech spec change, and it cites Amendments 147 and 150 (Exhibits 9 and 11) as prior NRC approval of this change.

The justification for this change is substantially the same as that used for removing the secondary containment requirement during the RPV head removal (Exhibit 14).

PCN 7.4.6, Revision No. 19, dated March 9, 1993 (Exhibit 16)

This PCN removed the requirement for secondary containment when moving the RPV steam separator and fuel pool gate during RPV disassembly. This PCN was also initiated, reviewed, and approved on March 9, 1993, and no reference document is shown. This PCN also reflects it involves a tech spec change, and it cites Amendments 147 and 150 (Exhibits 9 and 11) as prior NRC approval of this change.

The justification for this change is substantially the same as that used for removing secondary containment for the RPV head (Exhibit 14) and the dryer (Exhibit 15).

GE Telephone Record, dated March 9, 1993 (Exhibit 17)

The CNS managers requested the GE site representative contact GE officials in San Jose, California, regarding an interpretation of PRC 88-11. The GE site representative made a record of this telephone conversation. This record

reflects the GE officials in San Jose advised that PRC 88-11 addressed loads of 750 pounds or less moved over irradiated fuel, and "heavier loads are addressed in our response to NUREG 0612 and they have no concern for those if adequately addressed by our 0612 response."

CNS SORC Meeting S93-026, dated March 9, 1993 (Exhibit 18)

This document reflects the CNS SORC meeting of March 9, 1993, and that these minutes were prepared on March 11, 1993. These minutes document the attendees and that the meeting convened at 1515 hours [3:15 p.m.] for in-committee review and approval of two items.

Item 1 reflects that CNS Operations Manual Procedure 7.4.4, Revision No. 20, RPV head removal, was reviewed and approved. This was the SORC meeting approval of PCN 7.4.4, Revision No. 20 (Exhibit 14), that deleted the requirement for secondary containment when moving the RPV head. Item 2 granted an extension to March 12, 1993, for an operability evaluation unrelated to the secondary containment issue.

The minutes note that the SORC meeting was suspended [does not indicate the time] and reconvened at 1700 hours [5:00 p.m.] to review and approve CNS Operations Manual Procedures: 7.4.5, Revision No. 18; 7.4.6, Revision 19; and two other procedures unrelated to the secondary containment issue. This SORC meeting approved two PCNs dated March 9, 1993 (Exhibits 15 and 16) that deleted the requirement for secondary containment when moving the RPV dryer and separator during RPV disassembly.

The minutes do not note the time the SORC meeting completed its review and approval. The last line states, "After an extensive documentation review, the CNS Procedures listed above were reviewed and approved."

CNS 1993 Refueling Outage Shift Coordinators Meeting (Exhibit 19)

This document contains the minutes of the shift coordinators meetings for the period March 8, 1993, through March 12, 1993. The minutes reflect two daily meetings, at 1830 [6:30 p.m.] and at 0630 [6:30 a.m.]. The minutes also provide the attendees at each meeting.

INVESTIGATOR'S NOTE: The numerous references to the secondary containment issue have been highlighted by the investigator for easier review.

These references reflect several unsuccessful attempts to establish secondary containment and the successful test was noted in the 0630 [6:30 a.m.] meeting of March 12, 1993. This note states the secondary containment test passed around 2015 [8:15 p.m.] on March 11, 1993. The highlighted references also note that on a few occasions, the requirement to have secondary containment established before lifting the RPV head was discussed. The 1830 [6:30 p.m.] meeting of March 9, 1993, reflects that a SORC meeting that afternoon approved

7.4.4 (Exhibit 14), which remove the secondary containment leak rate test prerequisite before lifting the RPV head.

No reference to the SORC meeting approval of 7.4.5 and 7.4.6 (Exhibits 15 and 16) that removed the secondary containment prerequisite was found in the minutes. The 0630 [6:30 a.m.] meeting of March 10, 1993, reflects the RPV head is off and the steam dryer is out. The minutes noted the unlatching of the moisture separator was in progress. The minutes of the 1830 [6:30 p.m.] meeting on March 10, 1993, reflect "R. GARDNER gave permission/approval to move the Moisture Separator prior to Secondary Containment Leak Rate testing."

INVESTIGATOR'S NOTE: This approval to move the separator was the day after the SORC meeting approved the PCN to remove the separator without establishing secondary containment. GARDNER, CNS Plant Manager, was the SORC chairman. There is a question why approval was obtained to move the separator and why the minutes did not reflect the SORC meeting approval of 7.4.5 and 7.4.6 [dryer and separator] deleting the secondary containment requirement. The minutes had noted the approval of 7.4.4 which addressed the RPV head.

GE Inter Office Memorandum, dated April 13, 1993 (Exhibit 20)

This document consists of 4 pages. The first page is a draft of an inter office memorandum regarding clarification of PRC 88-11 and is dated April 13, 1993. Subsequent testimony obtained by OI:RIV, reflect that CNS officials asked for this documentation, and this draft memorandum was provided to CNS.

The second page of this exhibit is dated April 14, 1993. It is the facsimile (fax) cover sheet from the GE site representative at CNS to GE officials in San Jose, California, and Omaha, Nebraska. The comments on this cover sheet from the GE site representative at CNS state, "Plant Mgr said he realizes that he's pushing - but can we say something like this?"

The third page of this document is a copy of the original draft memorandum that contains written comments. The comments ask that the memorandum remove the clause, "when secondary containment leak integrity is not required." The comments to be added read, "Therefore, assuming compliance with the requirements of NUREG 0612, the removal of the reactor pressure RPV head and steam dryer assembly [without secondary containment leak tight integrity] does not result in the potential for damage to irradiated fuel in the reactor core."

The fourth page of this document provides a final copy of the April 13, 1993, memorandum. This copy is altered from the first draft, but does not include the comments requested by CNS officials.

INVESTIGATOR'S NOTE: The significance of the alterations and requested alteration to this memorandum is covered in the evidence section of this report, particularly from SCHOCK. SCHOCK would not incorporate these CNS requested comments into the memorandum as it would make the comments

plant specific, and GE had not performed a plant specific analysis for CNS. CNS did not include the separator in their proposed changes to the memorandum.

GE Proposal for CNS Evaluation, dated April 20, 1993 (Exhibit 21)

This GE proposal was made at the request of CNS officials. The proposal was for the evaluation of the consequences of an accidental drop of the RPV head, steam dryer, and shroud/steam separator assemblies.

NPPD Authorization to GE for Evaluation, dated April 21, 1993 (Exhibit 22)

This NPPD authorization to GE was for the evaluation of the RPV head, steam dryer, and shroud/steam separator assemblies at CNS. Specifically, it was to conduct an evaluation of the consequences of an accidental drop of RPV head, steam dryer, and shroud/steam separator assemblies.

GE Letter of Report, dated May 3, 1993 (Exhibit 23)

This was GE's initial letter which reflects their evaluation of an accidental drop of the RPV head, dryer, and separator. The results show the structural integrity of the RPV and core support [shroud and shroud support] are maintained. In addition, that contact of any of the dropped components is precluded due to geometric constraints. Therefore, according to the letter, there could be no damage to the fuel due to an accidental drop.

INVESTIGATOR'S NOTE: The engineers conducting this evaluation stated this evaluation did not consider parts of the load or RPV breaking off and hitting the fuel. They said a further analysis is necessary to determine the possibility of such an event. These statements are included in the evidence section of this report. The issue of secondary containment was not considered or discussed in the GE evaluation.

GE Report of Evaluation, dated May 7, 1993 (Exhibit 24)

This document is the technical report describing the evaluation of CNS RPV head, dryer, and shroud head/steam separator assembly drop.

NPPD Investigation Report, dated February 7, 1994 (Exhibit 25)

This document is the NPPD internal investigation of the revisions to the RPV disassembly procedures implemented in 1993. Attached to this report are several exhibits and notes of interviews with CNS personnel. This investigation report were completed by Robert GREEN, NPPD Office of the General Counsel, and Daniel STENGER, Attorney for Winston & Strawn.

INVESTIGATOR'S NOTE: STENGER requested this document be given confidential treatment pursuant to 10 CFR 2.790, since it contains information on personnel matters or otherwise confidential information, and refers to the conduct or performance of named individuals.

In summary, the investigation concluded NPPD did not willfully violate their tech specs. The report further stated the responsible CNS managers, and the SORC meeting reached a judgement that the procedure change was consistent with the tech specs and technically justified. The report noted "while documentation of these conclusions was weak and in some respects contained errors, it does not appear there was an intent to violate Technical Specifications or careless disregard of the requirements." The report also provides recommendations to NPPD (Exhibit 25, Executive Summary).

NRC/NRR Response for Technical Assistance, dated November 1, 1993 (Exhibit 26)

This document was an NRC determination of whether CNS was in compliance with tech spec 3.7.C.d during the March 1993 refueling outage. NRR opined "potential" meant something that exists in a state of potency or possibility for changing or developing into a state of actuality. NRR added that in this situation, although features and procedures are provided to preclude radiological releases by impact of the reactor RPV components, the potential can continue to exist. NRR added that if the licensee believes any condition described by "loads that could potentially damage irradiated fuel" should not require the establishment of secondary containment, a request for change with justification should be made to the staff [NRC].

Allegation: Alleged Deliberate Violation of a Technical Specification

Summary

The following individuals were interviewed by OI:RIV on the dates indicated regarding the allegation that CNS deliberately violated their tech specs. The pertinent testimony provided by these individuals is documented in the evidence section of this report.

<u>Name</u>	<u>Position</u>	<u>Date of Interview(s)</u>
John WILCOX	NRC Senior Operations Engineer	September 2, 1993
Robert PRATO	NRC Plant Systems Engineer	May 28, 1993
Douglas COE	NRC Acting Section Chief	May 26, 1993
Richard FOUST	CNS Assistant Engineering Manager	August 9, 1993
Brent MOELLER	CNS Senior Maintenance Technical Engineer	August 9, 1993
Michael BENNETT	NPPD Nuclear Licensing Engineer	June 3, 1993
John THOMPSON	CNS Lead Reactor Engineer	August 10, 1993
David MADSEN	NPPD Nuclear Licensing Engineer	June 3, 1993
Jeffery BRATRSOVSKY	CNS Mechanical Maintenance Crew Leader	August 9, 1993
← James FLAHERTY	CNS Engineering Manager	June 2, 1993
Lonnie SWANSON	CNS Senior Staff Safety Review Group Specialist	June 3, 1993
Paul BALLINGER	CNS Operations Engineering Supervisor	June 4, 1993

Michael YOUNG	CNS Maintenance Supervisor	June 3, 1993
Michael UNRUH	CNS Maintenance Manager	August 10, 1993
Charles ESTES	CNS Management Trainee	August 11, 1993
Eugene MACE	CNS Senior Manager of Site Support	August 10, 1993
Ricky GARDNER	CNS Plant Manager	December 13, 1993
John MEACHAM	CNS Senior Nuclear Division Manager of Safety	December 14, 1993
Guy HORN	NPPD Vice President, Nuclear	February 7, 1994
Thomas BLACK	GE Site Representative at CNS	July 14, 1993
Bradley ERBES	GE Nuclear Services Manager	July 14, 1993
Eleanore SCHOCK	GE Licensing Specialist	June 24, 1993 & September 18, 1993
James KLAPPROTH	GE Fuel Licensing Manager	September 17, 1993
Marcos HERRERA	GE Principal Engineer	June 24, 1993
Gary J. BALLAS	GE Program Engineer	June 24, 1993

### Evidence

INVESTIGATOR'S NOTE: It is important to note that CNS ~~changed~~ their PCNs in 1993, not their tech specs. However, the 1993 PCNs, item 5, indicate these PCNs are the result of previously approved tech spec changes. The testimony that follows reflects confusion among CNS personnel on two issues. First, as to whether these PCNs are tech spec changes or simply procedure changes. Secondly, if the previously approved tech spec changes [Amendments 147 and 150] cited on these PCNs support these PCNs.

1. WILCOX said he was the team leader of the Shutdown Risk and Outage Management Inspection conducted at the CNS. He indicated that the first phase was March 1 - 5, 1993, and the second phase was April 8 - 16, 1993 (Exhibit 27, p. 1).
2. WILCOX stated that ESTES informed him [WILCOX] on March 18 or 19, 1993, that CNS had experienced numerous problems during the first week of the outage. WILCOX said one of the problems was that CNS had been unable to pass a secondary containment test (Exhibit 27, p. 1).
3. WILCOX said he assigned PRATO, of his inspection team, to review the problems cited by ESTES. WILCOX stated PRATO's review began on April 8, 1993, and on April 10, 1993. PRATO informed him that CNS did not have secondary containment when they moved the RPV head, dryer, and separator (Exhibit 27, p. 1).
4. WILCOX stated he questioned CNS personnel on April 10 and 11, 1993, regarding the lack of secondary containment during RPV disassembly, but he received little information (Exhibit 27, p. 2).
5. WILCOX said he called another meeting for April 12, 1993, to discuss this secondary containment issue. WILCOX stated he and PRATO met with



- MACE, the outage director, and another person [NFI] from licensing. WILCOX said the CNS people told him there were several reasons they decided not to have secondary containment. WILCOX said this included a memorandum from LONG (Exhibit 2), that said secondary containment was not required until handling the fuel. WILCOX said CNS also offered GE correspondence (Exhibit 17) that indicated secondary containment was not necessary during RPV disassembly. WILCOX said CNS added that they met the requirements of NUREG 0612 since they had a single failure proof crane, and GE PRC 88-11 (Exhibit 4) was for loads of 750 pounds or less (Exhibit 27, p. 2).
6. WILCOX stated he met with GARDNER, MACE, ESTES, and others [NFI] on April 13, 1993, told them this was a tech spec violation, and they did not offer any comment at this meeting (Exhibit 27, p. 2).
  7. WILCOX said he advised ESTES at a meeting on April 14, 1993, that the SORC had not done a thorough overview in approving these procedure changes. WILCOX stated he told ESTES that CNS had removed the requirement for secondary containment during RPV disassembly; however, CNS never removed the same requirement for RPV assembly (Exhibit 27, p. 2).
  8. PRATO stated he was part of the NRC inspection team, and his responsibility was to review six significant events that occurred during the CNS outage. PRATO said that one of these events concerned the lack of secondary containment during the removal of the RPV head, dryer, and separator which was an apparent violation of CNS tech specs 3.7.C.d (Exhibit 27, p. 1).
  9. PRATO said ESTES presented the six events, but only mentioned the failure of a secondary containment test. PRATO said ESTES did not mention the later procedure changes and the movement of the loads without secondary containment. PRATO added that ESTES was the acting senior manager of operations when the SORC meeting approved the procedure changes on March 9, 1993 (Exhibit 28, p. 1).
  10. PRATO stated that after the ESTES briefing, he met with the CNS plant engineering group supervisor [NFI]. PRATO said this engineer gave an indepth presentation of the failure of the secondary containment test on March 8, 1993. PRATO said this engineer did not mention any procedure changes or movement of the loads over irradiated fuel without secondary containment. PRATO said the engineer told him the test unofficially passed on March 11, 1993, and officially on March 12, 1993 (Exhibit 28, p. 2).
  11. PRATO stated he and WILCOX met with ESTES; GARDNER; R. Awn, Operations Manager; YOUNG; J. V. SAYER, Radiological Manager; FLAHERTY; MOELLER; BALLINGER; J. A. JANTZEN, I&C Supervisor; G. E. SMITH, Quality Assurance Supervisor; and a licensing individual whose name he could not recall. PRATO said that he and WILCOX were forced to ask many questions

- at this meeting because the CNS staff were not offering much information. PRATO stated they eventually learned of the PCNs, and the three ~~loads~~ moved over irradiated fuel without secondary containment (Exhibit 28, p. 2).
12. PRATO stated that CNS told him and WILCOX that CNS did not notify the NRC resident inspector about this event. PRATO said CNS told them that the resident inspector is not in the chain to decide and for this reason, they would normally go to the NRC project manager. PRATO stated he could not recall the reason CNS gave for not notifying the project manager (Exhibit 28, p. 2).
  13. PRATO said CNS provided a history of NUREG 0612 and a Franklin Institute study from the early 1980s that addressed single failure proof cranes. PRATO said CNS also told them that GE PRC 88-11, in 1988, described potential problems moving loads on the refueling floor. PRATO said CNS saw this as a potential concern, and they asked for a tech spec change that resulted in an NRC approved Amendment 147. PRATO stated CNS told them that Amendment 147 did not qualify the weight load, and it [147] was concerned with damaging loads and the removal of the RPV head, dryer, and separator. PRATO stated that CNS told them that Amendment 147 occurred in the fall of 1991. PRATO stated CNS said they did not have any problems with the new tech spec during the 1991 outage (Exhibit 28, pp. 2 and 3).
  14. PRATO said at a later meeting with ESTES, he [PRATO] was told that with the RPV head unbolted, CNS was in a less safe condition. PRATO said ESTES continued that it was safer to move the three loads without secondary containment and flood the whole cavity. PRATO said, after further questioning, ESTES admitted the bolts were detensioned after CNS knew secondary containment had not been established. PRATO stated that he told ESTES that if the bolts had not been detensioned until secondary containment was operable, the less safe condition would not have existed. PRATO said ESTES simply shrugged his shoulders and did not respond (Exhibit 28, p. 3).
  15. PRATO said he also discussed the SORC meeting, and ESTES told him there had been confusion regarding the tech spec changes. PRATO said ESTES told him some people were against the changes, but FLAHERTY answered all their questions and "sold" them on the changes. PRATO said that ESTES told him that in hindsight, the SORC meeting probably should not have approved the tech spec changes because not all SORC members were 100 percent "sold" on them (Exhibit 28, p. 3).
  16. COE stated he was part of the NRC inspection team at CNS when he and WILCOX met with GARDNER on either April 13 or 14, 1993. COE stated that GARDNER had been chairman of the SORC that approved the revisions to remove the requirement for secondary containment. COE said GARDNER told them [him and WILCOX] that he had been a party to discussions leading to the removal of the secondary containment requirements. COE said that

- GARDNER told them the 1991 PCNs, adding the secondary containment requirements, were for small cranes and the loads there [head, dryer, and separator] utilized the large crane (Exhibit 29, p. 1).
17. COE said GARDNER added, based on a GE generic communication in 1991, CNS put in the secondary containment requirement. COE stated that GARDNER also told them the GE communication addressed lifting small loads of 100 pounds with small cranes. COE said that GARDNER stated, before 1991, there was no requirement for secondary containment when moving loads over irradiated fuel (Exhibit 29, p. 1).
  18. COE stated he had a separate meeting with MEACHAM, GARDNER's immediate supervisor, on April 15, 1993. COE stated that MEACHAM did not answer when asked why there should be any secondary containment requirements on small loads if the head, dryer, and separator would not damage irradiated fuel if dropped (Exhibit 29, pp. 1 and 2).
  19. COE said that MEACHAM told him it was better to remove the head, separator, and dryer without secondary containment and flood up the cavity. COE said MEACHAM added it was better than waiting a couple of days to establish secondary containment and having water only to the flange line of the RPV head. COE said that MEACHAM's explanation was technically sound; however, CNS should have contacted the NRC and asked for a waiver of compliance or an emergency tech spec change (Exhibit 29, p. 2).
  20. FOUST stated he prepared a memorandum (Exhibit 5) in December 1988 to BALLINGER. FOUST stated BALLINGER was his immediate supervisor, and MACE was BALLINGER's supervisor. FOUST said this memorandum was the official NPPD response to GE PRC 88-11 (Exhibit 4), and he worked on this response over a 1 or 2 month period (Exhibit 30, p. 1).
  21. FOUST said he talked to two GE engineers [NFI] in San Jose, California, at the time to get further clarification and background on PRC 88-11. FOUST said he was told GE could not determine a load weight that could potentially damage fuel (Exhibit 30, p. 1).
  22. FOUST said he also reviewed NUREG 0612 and NPPD responses to that NUREG. FOUST said he telephoned an east coast plant [could not recall which one], but they were of no assistance as they had not done an analysis (Exhibit 30, p. 1).
  23. FOUST said he talked to the maintenance and operations supervisors about his proposed procedure changes, and they gave their approval. FOUST said the proposed changes would require secondary containment during the outage when moving loads (Exhibit 30, p. 1).
  24. FOUST said this memorandum states secondary containment is required when moving any load over irradiated fuel, and he believes that such a requirement is still needed. FOUST said GE estimated about 300 pounds

- could do damage. FOUST said neither GE nor CNS had done an analysis to determine the exact weight; therefore, he recommended secondary containment when moving loads over irradiated fuel (Exhibit 30, p. 2).
25. FOUST stated that BALLINGER had asked many questions to verify the proposed changes and told him, he had "no problems" and gave his approval. FOUST stated that MACE also went over everything in the memorandum, including the recommendations, and gave his approval to the changes (Exhibit 30, p. 2).
  26. FOUST stated he made the 10.xx changes to the CNS procedures, and SWANSON wrote the 7.4xx procedure changes after contacting him on a few occasions (Exhibit 30, p. 2).
  27. FOUST stated his December 1988 memorandum and the 7.4xx procedures requiring secondary containment were included in CNS Proposal No. 68 (Exhibit 9). FOUST said they were approved by the NRC as Amendment 147 (Exhibit 10) to CNS tech specs (Exhibit 30, p. 2).
  28. FOUST stated that Amendment 147 required secondary containment for any load being moved over irradiated fuel that could potentially damage the fuel. FOUST said Amendment 147 resulted because neither CNS or GE had done an analysis (Exhibit 30, p. 2).
  29. FOUST said, as of March 8, 1993, no analysis of weight had been done to determine what weight could damage fuel (Exhibit 30, p. 2).
  30. FOUST stated, when he returned to work on March 9, 1993, he found the 7.4 procedures had been revised to remove the requirement for secondary containment. FOUST said FLAHERTY told him CNS had reviewed the NRC Long memorandum (Exhibit 2) and NUREG 0612 and knew other plants did not require secondary containment during RPV disassembly. FOUST said FLAHERTY added that CNS had a GE telecon (Exhibit 17) in support of these revisions (Exhibit 30, p. 3).
  31. FOUST stated he was not consulted when these changes were made in 1993. FOUST said that when he objected to FLAHERTY on March 9, 1993, after the SORC meeting approved the changes, GARDNER was also there and listened to this objection. FOUST stated that GARDNER did not make a comment to him at the time (Exhibit 30, p. 3).
  32. FOUST said he did not hear anyone mention that the NRC should be contacted regarding the changes in 1993 (Exhibit 30, p. 3).
  33. FOUST stated both NUREG 0612 and the LONG memorandum were familiar to CNS before PRC 88-11. FOUST said that PRC 88-11 required an analysis, and no analysis was done before changing procedures in 1993. FOUST added that NUREG 0612 was cited in the 1991 procedures to require secondary containment. FOUST said that NUREG 0612 addressed dropping loads of more than 1000 pounds on safety related equipment and had

certain crane requirements. FOUST said he considered NUREG 0612 when writing his memorandum in 1988 and if it had analyzed weight, it would have affected his recommended changes at the time. FOUST said that NUREG 0612 did not address secondary containment (Exhibit 30, pp. 3 and 4).

34. MOELLER stated he has been a senior maintenance technical engineer at CNS since 1989 or 1990 and was the originator of PCNs 7.4.4, Revision 19 and 7.4.5, Revision 17 (Exhibits 7 and 8). MOELLER said Jesse NICHOLS, Maintenance Mechanic, originated PCN 7.4.6, Revision 18 (Exhibit 9 and Exhibit 31, p. 1).
35. MOELLER said these three PCNs required secondary containment for the first time at CNS when moving the head, dryer, and separator during RPV disassembly. MOELLER said these PCNs were based on a memorandum dated December 7, 1988 (Exhibit 5), written by FOUST, and sent to BALLINGER. MOELLER said this memorandum was an analysis of GE PRC 88-11 (Exhibit 31, p. 1).
36. MOELLER stated he would have submitted these PCNs to UNRUH, but he could not recall if he discussed them with him, but he [MOELLER] did discuss these PCNs with SWANSON at the time (Exhibit 31, p. 2).
37. MOELLER said he was not involved with the 1993 outage, and he first learned the 1991 PCNs had been revised during a conversation with SWANSON. MOELLER stated he agreed with SWANSON that the requirement to have secondary containment should not have been deleted (Exhibit 31, p. 2).
38. MOELLER said that PRC 88-11 and NUREG 0612 are two completely different issues. MOELLER said NUREG 0612 came out about 1982, and he and FLAHERTY became involved with it in 1983. MOELLER said NUREG 0612 does not address secondary containment and is only concerned with moving heavy loads over irradiated fuel and safety related equipment. MOELLER said that PRC 88-11 specifically addresses secondary containment as a requirement (Exhibit 31, p. 2).
39. MOELLER said that during the NRC inspection in March 1993, ESTES asked him about NUREG 0612 as it related to secondary containment. MOELLER stated he told ESTES that he was "out of luck." MOELLER said he told ESTES the NRC caught them making a mistake, and NUREG 0612 does not give any basis for not having secondary containment as a requirement during RPV disassembly. MOELLER said that ESTES did not believe him, and he thought ESTES was looking for justification for the 1993 PCN revisions (Exhibit 31, p. 2).
40. MOELLER stated that based on FOUST's memorandum, 7.4xx procedures had to be changed. MOELLER said it was his [MOELLER's] decision which

procedures to change and since there was no weight analysis conducted per FOUST's memorandum, all three loads required secondary containment (Exhibit 31, p. 2).

41. BENNETT stated he has been employed as a nuclear licensing engineer with NPPD for 5 years. BENNETT said he prepared the tech spec change that eventually was approved by the NRC as Amendment 147 (Exhibit 10). BENNETT said he carried this change through the review and approval process (Exhibit 32, p. 1).
42. BENNETT said there were two reasons Amendment 147 was requested: there was a change in logic regarding the reactor building on secondary containment isolation, and CNS had also made a commitment in response to an earlier NRC inspection report to clarify when the reactor building monitor should be operable (Exhibit 32, p. 1).
43. BENNETT said the monitors would be operable when moving irradiated fuel or moving loads or objects over irradiated fuel with the potential to damage the fuel. BENNETT stated Amendment 147 added Section 3.7.C.d to CNS tech specs. BENNETT said this change meant that secondary containment was necessary when moving fuel or a load over the fuel with the potential to damage the irradiated fuel, if dropped. BENNETT said load weight was discussed and procedures were changed before the tech spec was approved by the NRC (Exhibit 32, p. 1).
44. BENNETT said he had not seen PCN 7.4.4, Revision 19, at the time he prepared the proposed change for Amendment 147. BENNETT stated he had talked to THOMPSON about Revision 19, and he knew the issue of what constituted a load and when secondary containment was needed and this was being discussed by other CNS departments when he was preparing his proposed change (Exhibit 32, p. 1).
45. BENNETT reviewed PCN 7.4.4, Revision 19, and stated it appeared to deal with the same issue as his proposed change. BENNETT said this issue was about moving loads over irradiated fuel that could potentially damage the fuel (Exhibit 32, p. 1).
46. THOMPSON said he has been at CNS since 1989, and his supervisor was BALLINGER. THOMPSON said he was familiar with the FOUST memorandum (Exhibit 5) and stated he got involved with CNS 10.xx procedures because of that memorandum. THOMPSON said he did not get involved with the 7.xx changes as a result of the FOUST memorandum (Exhibit 33, p. 1).
47. THOMPSON stated he had a conversation with SWANSON when he [SWANSON] was adding the secondary containment requirement in the 7.4xx procedures (Exhibit 33, p. 1).
48. THOMPSON said he also talked often to BENNETT, who was drafting Proposal No. 68 [Amendment 147], and he [THOMPSON] had been involved in the early drafts of that proposal. THOMPSON said the 10.xx procedures, the 7.4xx

procedures, and Proposal No. 68 were all the same effort by CNS to put secondary containment requirements in CNS procedures and tech specs. THOMPSON stated that all of these efforts were based on PRC 88-11 (Exhibit 33, pp. 1 and 2).

49. THOMPSON said he first heard the 7.4xx series had been revised to remove the secondary containment requirements soon after those revisions in March 1993. THOMPSON said he wondered what loads over fuel could potentially damage fuel if those three loads would not damage fuel if dropped. THOMPSON stated that BALLINGER told him CNS had some older analysis from GE that said these loads would not drop on the fuel (Exhibit 33, p. 2).
50. THOMPSON stated that changing the 7.4xx series would be a change to tech specs if they deleted the prerequisites from moving loads over the fuel. THOMPSON said deleting the secondary containment requirement in these PCNs was a tech spec change. THOMPSON said these PCNs required a License Change Request (LCR) be submitted to the NRC for their approval (Exhibit 33, p. 2).
51. MADSEN stated he has been a nuclear licensing and safety engineer for NPPD for approximately 2 1/2 years. MADSEN stated an NRC letter in 1988 (Exhibit 2) pointed out the difference between surveillance requirements and the BASES in the CNS tech specs. MADSEN stated the BASES were more restrictive than the surveillance requirements as it applied to the secondary containment requirements in the CNS tech specs (Exhibit 34, p. 1).

INVESTIGATOR'S NOTE: BASES are part of CNS tech specs that provide amplification of the Limiting Conditions for Operation (LCO), and to the surveillance requirements.

52. MADSEN stated NPPD, and specifically himself, had used this NRC letter (Exhibit 2) as the basis for Proposal No. 95 (Exhibit 11). MADSEN said he wrote this proposed change to reword the BASES to agree with the surveillance requirement. MADSEN said the BASES required a secondary containment test before opening primary containment during refueling. MADSEN said this proposal was to delete that requirement and thereby agree with the surveillance requirements, which did not require the test before opening primary containment. MADSEN stated this proposal was approved by the NRC through Amendment 150 (Exhibit 12 and Exhibit 34, p. 1).
53. MADSEN stated Amendment 150 was for administrative or editorial purposes. MADSEN said it did not really change anything technically, it was just a "clean-up" of the language (Exhibit 34, p. 1).

54. BRATRSOVSKY said he had been the mechanical maintenance crew leader at CNS for the past 4 or 5 years. BRATRSOVSKY stated he was involved in the 1993 outage, working on one of the two 12-hour shifts employed during the outage (Exhibit 35, p. 1).
55. BRATRSOVSKY stated he was aware that CNS was having trouble passing a secondary containment test, and they wanted to continue with RPV disassembly. BRATRSOVSKY said YOUNG and UNRUH discussed the need for a TPCN. BRATRSOVSKY said YOUNG eventually directed him to prepare a TPCN (Exhibit 35, p. 1).
56. BRATRSOVSKY stated he prepared TPCN 7.4.4, Revision 19, which deleted the prerequisite to have secondary containment and shift supervisor approval before detensioning the RPV head bolts (Exhibit 35, p. 1).
57. BRATRSOVSKY said he had written TPCNs in the past, although it was unusual for him to initiate them. BRATRSOVSKY said he could not recall the last TPCN he had completed (Exhibit 35, p. 2).
58. FLAHERTY stated he is the engineering manager at CNS and his immediate supervisor is GARDNER (Exhibit 36, p. 1).
59. FLAHERTY stated he was the originator of CNS PCN 7.4.4, Revision 20, dated March 9, 1993 (Exhibit 14). FLAHERTY said this document probably started in the Safety Review Group (SRG), and he wrote the comments on pages 2 and 3 (Exhibit 36, p. 1).

INVESTIGATOR'S NOTE: FLAHERTY's signatures as originator also appears on CNS PCNs 7.4.5, Revision 18; and 7.4.6, Revision 19 (Exhibits 15 and 16).

60. FLAHERTY said he had discussions of secondary containment with the SRG group, primarily with SWANSON, who probably did all the typing on the PCNs (Exhibit 36, p. 1).
61. FLAHERTY stated these PCNs removed the requirement to have secondary containment during RPV disassembly. FLAHERTY said the discussions regarding secondary containment were 1 day to 1 week before the date of the PCNs. FLAHERTY said the decision to remove secondary containment came from a meeting with MEACHAM, HORN, and GARDNER. FLAHERTY said he could not recall who actually directed him to prepare these PCNs, but based on this discussion, he initiated the PCN action (Exhibit 36, p. 1).
62. FLAHERTY stated there were nine CNS departments that did technical reviews, and they all concurred with the technical aspects of this PCN. FLAHERTY said the SORC meeting is different from the technical review. FLAHERTY stated the signature of the SORC Chairman, who was GARDNER, is the approval and authorization for the PCN (Exhibit 36, p. 1).



63. FLAHERTY said he had been involved with several PCNs over the past 3 years. FLAHERTY said it was unusual to initiate, review, and approve a PCN in 1 day, but it had been done (Exhibit 36, p. 2).
64. FLAHERTY stated he marked item 5 on page 1 of the PCN as a tech spec change based on Amendments 147 and 150 which he also cited in item 5. FLAHERTY said he also cited these amendments in his written justification on pages 2 and 3 (Exhibit 36, p. 2).
65. FLAHERTY stated that since this PCN showed a tech spec change [item 5], it would need approval by the NRC before the SORC meeting could approve it. FLAHERTY said an LCR had previously been done by CNS for this PCN. FLAHERTY said that Amendments 147 and 150 allowed this change to tech specs. FLAHERTY stated that by showing these amendments in item 5, it told the SORC meeting that this tech spec change had already been approved by the NRC (Exhibit 36, p. 2).
66. FLAHERTY said that Amendments 147 and 150 are cited in item 5 of this PCN in support of this change to tech specs. FLAHERTY stated his written comments on pages 2 and 3 of this PCN provide the justification of this change to tech specs. FLAHERTY said it was possible he had discussions regarding secondary containment with licensing, but he did not recall (Exhibit 36, p. 2).
67. FLAHERTY said Amendments 147 and 150 had removed the requirement for secondary containment (Exhibit 36, p. 2).
68. FLAHERTY said his written justification on this PCN referenced NPPD's response to NRC inspection report #88-07 (Exhibit 3). FLAHERTY said he could not recall the details of that response without reviewing it (Exhibit 36, p. 2).
69. FLAHERTY stated he also referenced the record of a GE phone conversation [telecon] between BLACK, KLAPPROTH, and SCHOCK (Exhibit 17). FLAHERTY said the telecon reflected GE's opinion regarding secondary containment during RPV disassembly (Exhibit 36, p. 2).
70. FLAHERTY stated he also reviewed GE PRC 88-11 (Exhibit 4) in preparation of this PCN, and it addressed loads of 750 pounds or less. FLAHERTY said NUREG 0612, written in 1981 or 1982, addressed the movement of heavier loads. FLAHERTY said he had been involved with corporate engineering in the implementation of NUREG 0612 and its effect on CNS in May 1982 (Exhibit 36, pp. 2 and 3).
71. FLAHERTY stated he had looked at both the NPPD Proposal No. 95 and the resulting NRC approved Amendment 150 when preparing PCN 7.4.4, Revision 20. FLAHERTY said he then reviewed Amendment 150 and stated it removed secondary containment during refueling by removing a conflicting statement in the BASES. FLAHERTY added that this amendment removed a requirement to conduct a secondary containment integrity test before

opening primary containment. FLAHERTY said this test had not been in the surveillance requirements or LCO of the tech specs. FLAHERTY said this amendment brought the BASES into agreement with the surveillance requirements and the LCO (Exhibit 36, p. 3).

72. FLAHERTY stated he reviewed NPPD Proposal No. 68 and Amendment 147 when preparing PCN 7.4.4, Revision 20 (Exhibit 36, p. 3).

INVESTIGATOR'S NOTE: FLAHERTY was provided a copy of NPPD Proposal No. 68 and NRC approved Amendment 147 to review. The following responses by FLAHERTY were made after this review.

73. FLAHERTY said Amendment 147 effectively increased the requirement for secondary containment. FLAHERTY said this amendment added another restriction to the LCO of the tech specs regarding when secondary containment is required. FLAHERTY stated this amendment required secondary containment when moving potentially damaging loads over irradiated fuel (Exhibit 36, p. 3).
74. FLAHERTY acknowledged the first sentence in the justification that he wrote on page 2 of the PCN read that Amendments 147 and 150 removed the requirements to demonstrate secondary containment before opening primary containment. FLAHERTY, when questioned, said that sentence was not totally accurate (Exhibit 36, p. 3).
75. FLAHERTY, after it was pointed out that Amendment 150 removed a conflicting statement and Amendment 147 added the secondary containment requirement, responded that the first sentence in his write-up was not true at all (Exhibit 36, p. 4).
76. FLAHERTY later stated that, after further thought, Amendment 147 had nothing to do with any of the three PCNs. FLAHERTY said that Amendment 150 applied to all three PCNs because it did away with secondary containment testing before opening primary containment during refueling. FLAHERTY added that Amendment 150 introduced a change to tech specs (Exhibit 36, p. 4).

INVESTIGATOR'S NOTE: MADSEN, the NPPD official who wrote NPPD Proposal No. 68, stated Amendment 150 was for administrative or editorial purposes, and it did not change anything technically (see item 52 above).

77. FLAHERTY said that the failure of the secondary containment test on March 8, 1993, before moving the RPV head, initiated a discussion of secondary containment. FLAHERTY said the test did not work and CNS, with sound basis, changed their procedures. FLAHERTY stated the question was whether CNS could disassemble the RPV without testing for secondary containment. FLAHERTY said they reviewed previous PCNs.

PRC 88-11, NUREG 0612, and talked to GE about the basis and intent of PRC 88-11. FLAHERTY said, based on these documents and conversation with GE, CNS proceeded with the PCNs (Exhibit 36, p. 4).

78. FLAHERTY said CNS did not contact the NRC about the test failure or procedure changes because CNS did not think this issue applied to the NRC. FLAHERTY stated they must contact the NRC only if it affects a tech spec change or an unreviewed safety question (Exhibit 36, p. 4).
79. FLAHERTY was asked again why he believed these PCNs were a tech spec change and how Amendments 147 and 150 supported the change. FLAHERTY stated that Amendment 147 was not applicable, but Amendment 150 removed a requirement for a secondary containment test before opening primary containment for refueling. FLAHERTY stated that the RPV head, dryer, and separator are part of the primary containment. FLAHERTY said the removal of these three loads are before the evolution of refueling (Exhibit 36, pp. 4 and 5).

INVESTIGATOR'S NOTE: Amendment 150 simply brought the BASES into agreement with the surveillance requirement that a secondary containment test was not necessary before opening primary containment which is the drywell head. Amendment 147 required secondary containment before moving any load over irradiated fuel that could damage the fuel if dropped. The 1991 PCNs specifically addressed the requirement for secondary containment before moving the RPV head, dryer, and separator.

FLAHERTY's contention that Amendment 150 allowed load movement (head, dryer, and separator) over irradiated fuel does not appear to take into consideration that the head, dryer, and separator were not analyzed before March 9, 1993, to determine if they would damage irradiated fuel if dropped. Therefore, it would appear that Amendment 147, tech spec 3.7.C.1.d, precluded such a movement without secondary containment. According to the NRR staff, to change these PCNs and allow movement of these three loads without secondary containment was a violation of tech specs.

80. FLAHERTY admitted that if the secondary containment test had not failed on March 8, 1993, CNS would not have immediately reviewed and changed procedures. FLAHERTY said, at some point, CNS would have reviewed the situation and rewrote the procedure as the current procedure was too restrictive (Exhibit 36, p. 5).
81. FLAHERTY stated he signed PCN 7.4.4, Revision 19, dated July 1991, for the engineering department. FLAHERTY admitted that PCN was based on NUREG 0612 and PRC 88-11, but did not respond when asked why he reversed his position on secondary containment in 1993, in 1 day, when it took 11 months for him to approve the 1991 PCNs (Exhibit 36, p. 5).

82. FLAHERTY said there is pressure to keep an outage moving, and he had heard the figure of \$200,000 per day in lost revenues and added costs. FLAHERTY said that the failed test encouraged CNS to find another solution to the problem (Exhibit 36, p. 5).
- INVESTIGATOR'S NOTE: FLAHERTY earlier stated this PCN was a tech spec change and Amendments 147 and 150 supported and justified this change (see items 64 and 65 above).
83. FLAHERTY stated he marked this PCN as a tech spec change and referenced Amendments 147 and 150 as they had not been referenced before on a PCN. FLAHERTY said he did not mean to construe that those amendments were driving the PCN, they were only references (Exhibit 36, p. 5).
84. FLAHERTY said he still believes Amendment 150 removed the requirement for secondary containment before opening primary containment for refueling and therefore applied to this PCN. FLAHERTY added that this meant secondary containment was not needed until actually moving the fuel (Exhibit 36, p. 6).
85. FLAHERTY admitted Amendment 150 did not change the surveillance requirement or the LCO of CNS tech specs. it only deleted a statement in the BASES. FLAHERTY, when asked how Amendment 150 removed secondary containment in RPV disassembly, responded that per PCN 7.4.4, Revision 20, "this changed CNS's understanding as to when a secondary containment test is required" (Exhibit 36, p. 6).
86. SWANSON stated he was the proofreader for PCN 7.4.4, Revision 20, and that he prepared and typed items 1 through 6 (Exhibit 37, p. 1).
87. SWANSON said GARDNER initially approached him about noon on March 9, 1993, and told him that CNS wanted to make some changes to RPV disassembly procedures. SWANSON stated GARDNER told him that FLAHERTY would meet with him and tell him what changes to make to the procedures (Exhibit 37, p. 1).
88. SWANSON stated that FLAHERTY met with him sometime after 12:30 p.m. on March 9, 1993. SWANSON said FLAHERTY told him CNS management did not feel they needed the secondary containment during RPV disassembly. SWANSON said FLAHERTY added that NUREG 0612 dealt with heavy loads and an evaluation of CNS "rigs and loads" exempted the secondary containment requirement (Exhibit 37, p. 1).
89. SWANSON stated that his group writes procedures, reviews them, and make changes to other procedures. SWANSON said this PCN should have come out of the Maintenance Department, supervised by YOUNG. SWANSON said he was a former maintenance foreman with several years experience in RPV disassembly and that is why they came to him for this PCN (Exhibit 37, p. 1).

90. SWANSON said item 8, step 4 of this PCN, removed the secondary containment requirement during RPV head removal. SWANSON stated that both GARDNER and FLAHERTY told him that NUREG 0612 was the basis for the decision. SWANSON said they [GARDNER and FLAHERTY] also told him that GE PRC 88-11 was no longer applicable (Exhibit 37, p. 2).
91. SWANSON said he did not independently come to the conclusion that secondary containment was not required during RPV disassembly. SWANSON said FLAHERTY instructed him to remove the requirement steps in the tech specs (Exhibit 37, p. 2).
92. SWANSON said he questioned FLAHERTY at length to determine whether it was permissible or wise to remove the secondary containment requirement and if NUREG 0612 addressed secondary containment. SWANSON said FLAHERTY told him there was no unresolved safety question with NUREG 0612 and that it dealt with heavy loads and safe paths. SWANSON said FLAHERTY reassured him that it was okay to remove secondary containment requirement (Exhibit 37, p. 2).
93. SWANSON said he was familiar with PCN 7.4.4, Revision 19, that added the secondary containment requirement, and he had signed that PCN as a technical reviewer. SWANSON said the new PCN was initiated, reviewed, and approved within 1 day, versus the 11 months for the original PCN process. SWANSON said the new PCN had a review only by SORC meeting where the original PCN had both a technical and SORC meeting review (Exhibit 37, pp. 2 and 3).
94. SWANSON stated that Amendments 147 and 150 are not related to the new PCN [1993]. SWANSON said that FLAHERTY told him on March 9, 1993, that he was referencing them in item 5 because he had used them for his justification on page 2 of the PCN. SWANSON stated he knew this justification was not accurate or proper. SWANSON said he should have been more forceful with FLAHERTY about his [SWANSON's] concerns about NUREG 0612 and the use of Amendments 147 and 150 (Exhibit 37, p. 3).

INVESTIGATOR'S NOTE: FLAHERTY first stated that Amendments 147 and 150 justified the PCN and tech spec change [Items 64 and 65 above]. FLAHERTY later said these amendments were only references and the PCNs were not tech spec changes (Item 82 above). In evidence item 93, SWANSON stated that FLAHERTY told him on March 9, 1993, that these amendments justified the tech spec changes (PCNs).

95. BALLINGER reviewed a memorandum from FOUST to himself, dated December 7, 1988, (Exhibit 5) and stated he recalled the document. BALLINGER said FOUST worked for him then. BALLINGER said FOUST was reporting on GE PRC 88-11 (Exhibit 4) on how it affected CNS. BALLINGER said FOUST made recommendations including prohibiting the movement of objects over irradiated fuel during planned outages when secondary containment is not operable. BALLINGER said FOUST also recommended not moving any object

of 300 pounds or more over irradiated fuel without secondary containment. BALLINGER said FOUST reported that load weight could cause damage to irradiated fuel if dropped (Exhibit 38, pp. 1 and 2).

96. BALLINGER stated he initialed the technical review for the Engineering Department on PCN 7.4.4, Revision 19, which was approved in July 1991. BALLINGER said this PCN was based on FOUST's memorandum and PRC 88-11 and added the secondary containment requirement to CNS procedures when moving the RPV head. BALLINGER said that PCN revisions were also done for the separator and dryer to require secondary containment when removing those loads (Exhibit 38, p. 2).
97. BALLINGER stated the 1991 PCNs took about 10 months to initiate, review, and approve. BALLINGER said in addition to being a technical reviewer on these PCN's, he was also an approving SORC member (Exhibit 38, p. 2).

INVESTIGATOR'S NOTE: BALLINGER said he did not recall Amendment 150 by number; therefore, a copy of this amendment was provided for his review.

98. BALLINGER stated Amendment 150 (Exhibit 12) deleted a statement from the BASES to perform a secondary containment test before opening primary containment. BALLINGER said this brought the BASES into agreement with the surveillance requirement 4.7.C.1.c of CNS tech specs (Exhibit 38, p. 2).
99. BALLINGER said the date of NPPD Proposal No. 95 (Exhibit 11) that resulted in NRC approved Amendment 150, was July 19, 1991. BALLINGER said that was 1 day after approval of PCN 7.4.4, Revision 19, and there was an apparent connection between the two documents. BALLINGER said CNS was attempting to ensure secondary containment was appropriate (Exhibit 38, p. 3).

INVESTIGATOR'S NOTE: BALLINGER reviewed a copy of NPPD Proposal No. 68 (Exhibit 9) and NRC approved Amendment 147 (Exhibit 10) and stated he was familiar with these documents.

100. BALLINGER stated Amendment 147 added the requirement for secondary containment for loads moved over irradiated fuel that have the potential to damage the fuel if dropped (Exhibit 38, p. 3).
101. BALLINGER said Proposal No. 68 was dated July 18, 1991, the same date PCN 7.4.4, Revision 19 was approved. BALLINGER said Revision 19 and Amendments 147 and 150 were ensuring CNS appropriately utilized secondary containment (Exhibit 38, p. 3).
102. BALLINGER stated that he approved PCN 7.4.4, Revision 20, as a SORC member and based on the signatures, the technical review and SORC meeting approval were completed together. BALLINGER stated CNS also approved revisions to PCNs 7.4.5 and 7.4.6 [dryer and separator] at that

- same time in 1993. BALLINGER said these three PCNs removed the secondary containment requirement during RPV disassembly (Exhibit 38, p. 3).
103. BALLINGER stated he believed CNS was able to give proper review and approval for these three revisions within 1 day. BALLINGER acknowledged that the original PCNs, adding the secondary containment requirement, was an 11 month process (Exhibit 38, p. 3).
  104. BALLINGER stated he assisted FLAHERTY with the 1993 PCNs and NUREG 0612 and PRC 88-11 were used as the bases. BALLINGER said they both had prior knowledge of these documents, and BALLINGER added he did research work on NUREG 0612 in preparation of these PCNs. BALLINGER said FLAHERTY also had a GE telecon (Exhibit 17) of a phone conversation between GE officials. BALLINGER stated that he and FLAHERTY also had a general discussion of the secondary containment issue (Exhibit 38, p. 3).
  105. BALLINGER stated, if the secondary containment test had not failed there would have been no reason to change procedures (Exhibit 38, p. 3).
  106. BALLINGER said NUREG 0612, which addresses plant equipment [cranes] that carry loads over safety related equipment and fuel, does not mention secondary containment. BALLINGER said, in his view, if you complied with NUREG 0612, there is only a small chance of potential damage to the fuel (Exhibit 38, p. 4).
  107. BALLINGER initially said he agreed with item 5 of the 1993 PCNs that these were tech spec changes and are supported by Amendments 147 and 150. BALLINGER stated that the SORC meeting could not have approved these changes without an NRC approved amendment (Exhibit 38, p. 4).
  108. BALLINGER, after some discussion, admitted Amendment 147 added the secondary containment requirements and did not support these tech spec changes. BALLINGER also admitted that Amendment 150 did not support these tech spec changes (Exhibit 38, p. 4).
  109. BALLINGER stated, based on the lack of supporting amendments, 1 day did not provide enough time to initiate, review, and approve these PCNs. BALLINGER said CNS had acted too quickly (Exhibit 38, p. 4).
  110. BALLINGER stated that PCN 7.4.4, Revision 20, changed tech spec 3.7.C.d. BALLINGER stated Revision 20 was a clarification of the tech specs and really not a tech spec change (Exhibit 38, p. 4).
  111. BALLINGER said he was not comfortable at the time he was helping FLAHERTY with these PCNs because he was rushed to do the research. BALLINGER added he was less comfortable today considering the errors on the PCNs (Exhibit 38, p. 4).

112. BALLINGER said he was "rushed" by FLAHERTY so he only reviewed, not researched NUREG 0612, and returned it quickly to FLAHERTY. BALLINGER said FLAHERTY wanted to see how NUREG 0612 fit with PRC 88-11 and the information discussed in the GE telephone conversation (Exhibit 38, p. 4).
113. BALLINGER stated that the RPV head, dryer, and separator were not loads that have the potential for damaging irradiated fuel. BALLINGER acknowledged the justification in the 1993 PCNs did not include the fact that these loads did not have the potential to damage the fuel (Exhibit 38, p. 4).
114. BALLINGER admitted that information from GE, the GE telecon, or NUREG 0612 never indicated that these loads could not potentially damage fuel (Exhibit 38, pp. 4 and 5).
115. BALLINGER stated, if it had been his decision, he would throw out the new PCNs and wait until an analysis was completed (Exhibit 38, p. 5).
116. BALLINGER stated there was considerable discussion as to whether a change in interpretation of procedures causes a change in tech specs. BALLINGER said FLAHERTY seemed to think with Revision 20 there was a change. BALLINGER added that if FLAHERTY thought this was a tech spec change, he should have gone to the NRC for approval (Exhibit 38, p. 5).
117. YOUNG stated he has been the maintenance supervisor at CNS for about 2 1/2 years. YOUNG said, as part of his duties, he has a major interest in refueling and RPV disassembly during outage (Exhibit 39, p. 1).
118. YOUNG stated that PCN 7.4.4, Revision 19, was approved about 6 months after he obtained his present position, and he signed that PCN as a proofreader. YOUNG said he concurred with the changes to add the secondary containment requirements. Young said revision 19 was based on GE PRC 88-11 and NUREG 0612 (Exhibit 39, p. 1).
119. YOUNG said he was familiar with the secondary containment test that failed on March 8, 1993, but not familiar with Amendment 147 and somewhat familiar with Amendment 150. YOUNG reviewed Amendment 150 and stated it removed a requirement in the BASES to do a secondary containment test before opening primary containment. YOUNG said the tech specs surveillance requirement did not require this test, and Amendment 150 brought the BASES into agreement with the tech spec. YOUNG added that Amendment 150 only addressed the drywell head and not the RPV head (Exhibit 39, p. 2).
120. YOUNG stated he signed PCN 7.4.4, Revision 20, as the responsible supervisor. YOUNG said he also initialed the technical review for the Maintenance Department and signed this revision as a member of SORC (Exhibit 39, pp. 2 and 3).



121. YOUNG said FLAHERTY undertook the investigation to determine why secondary containment was required to move the RPV head. YOUNG said they uncovered PRC 88-11 and some NRC documents that addressed secondary containment, and they pursued this issue with GE officials. YOUNG said the GE author of PRC 88-11 told them CNS had misread the document as it was not addressing heavy loads (Exhibit 39, p. 2).
122. YOUNG stated that FLAHERTY told him that PCN 7.4.4, Revision 19, which required secondary containment, was "written wrong and could be undone." YOUNG said FLAHERTY based this on an analysis of lifting loads, NUREG 0612, and other NRC documents (Exhibit 39, p. 2).
123. YOUNG stated that everyone in the SORC meeting was satisfied with Revision 20, including GARDNER and MEACHAM, who were present for part of the review (Exhibit 39, p. 3).
124. YOUNG stated that Revision 20 was completed within 1 day. YOUNG said that CNS had found an error and corrected it quickly. YOUNG said he was part of the SORC meeting and the formal discussions on this PCN. YOUNG said he never thought about contacting the NRC and did not recall anyone contacting the NRC (Exhibit 39, p. 3).
125. YOUNG stated that Revision 20, item 5, reflected this PCN was a tech spec change and that Amendments 147 and 150 supported this change. YOUNG added that without these amendments, the SORC meeting could not have approved this PCN. YOUNG said an LCR would have had to be sent to the NRC for approval of this change (Exhibit 39, p. 3).
- INVESTIGATOR'S NOTE: YOUNG could not recall Amendment 147 and was provided a copy of it to review during the interview. It was apparent YOUNG was reading Amendment 147 for possibly the first time. YOUNG appeared to have no prior knowledge of this amendment.
126. YOUNG reviewed Amendment 147 and stated 3.7.C.d was added to the tech specs which increased the restrictions when secondary containment was required. YOUNG said Amendment 147 required secondary containment when moving loads over irradiated fuel that could potentially cause damage to the fuel (Exhibit 39, p. 3).
127. YOUNG stated upon review of Amendment 147, it had no application or relation to PCN 7.4.4, Revision 20. YOUNG stated, after further review, Amendment 150 did not provide support to this PCN. YOUNG stated that as a SORC member, it now causes him some concern that Amendments 147 and 150 provide no support for this tech spec change (Exhibit 39, p. 3).
128. YOUNG admitted he had not spent anytime reviewing Amendments 147 and 150. YOUNG said he had reviewed PRC 88-11, a GE telecon, and some other documents that he could not recall (Exhibit 39, p. 3).

129. YOUNG stated that before his interview with the NRC, FLAHERTY told him that he [FLAHERTY] thought he had made a mistake referencing Amendment 147. YOUNG said FLAHERTY was not sure how he would address that with the SORC meeting (Exhibit 39, p. 4).
130. YOUNG said he did not think it was his responsibility to determine if the amendments applied. YOUNG added he was not a licensing expert, and he had taken FLAHERTY's word on the matter (Exhibit 39, p. 4).
131. YOUNG stated that 7.4.4, Revision 20, was not a tech spec change. YOUNG said he came to that conclusion during this interview and review of Amendments 147 and 150 with the NRC. YOUNG said tech specs do not require secondary containment until actually handling the fuel (Exhibit 39, p. 4).
132. YOUNG said he had disagreed with PCN 7.4.6, Revision 19, which removed the secondary containment requirement. YOUNG said the SORC meeting convinced him it was permissible because the lift had been analyzed, and it will not allow the separator to drop back into the fuel (Exhibit 39, p. 4).
133. YOUNG said there is a potential for dropping a load [head, dryer, and separator] and shearing a stud. YOUNG said the stud has the potential to hit and damage the fuel. YOUNG stated he believed GE had analyzed the entire procedure and they [GE] did not see a problem (Exhibit 39, p. 4).
134. UNRUH stated he was the maintenance manager at CNS and had signed the 1991 PCNs 7.4.4, Revision 19; 7.4.5, Revision 17; and 7.4.6, Revision 18 as a SORC member. UNRUH stated he also signed the first two PCNs as technical reviewer (Exhibit 40, p. 1).
135. UNRUH stated that the concerns of GE PRC 88-11 are what initiated these three PCNs. UNRUH said that NUREG 0612 was also cited as a reference in these PCNs (Exhibit 40, p. 1).
136. UNRUH stated the 1991 PCNs made secondary containment a requirement when moving the RPV head, dryer, and separator over irradiated fuel. UNRUH said this movement only occurs during RPV disassembly (Exhibit 40, p. 1).

INVESTIGATOR'S NOTE: UNRUH was provided a copy of NPPD Proposal No. 68 and Amendment 147 for his review.

137. UNRUH said Amendment 147 added 3.7.C.d to the CNS tech specs. UNRUH said this tech spec required secondary containment be operable when moving loads over irradiated fuel that could potentially damage the fuel if dropped. UNRUH added that this tech spec did not qualify or quantify the load (Exhibit 40, pp. 1 and 2).

138. UNRUH said there is a subtle difference between Amendment 147 and the three PCNs. UNRUH stated Amendment 147 addresses loads that have the "potential" to damage fuel, while the 1991 PCNs cite specific loads [head, dryer, and separator] moved over irradiated fuel. UNRUH said the "potential" to damage is inferred with these specific loads because secondary containment is required when moving these loads (Exhibit 40, p. 2).
139. UNRUH stated that PRC 88-11 does not quantify weight load. UNRUH said NUREG 0612 is about safety related equipment and the movement of loads more than 1000 pounds near the safety related equipment. UNRUH added that NUREG 0612 discusses critical paths and equipment used, but does not address secondary containment requirements (Exhibit 40, p. 2).
140. UNRUH said he was familiar with the secondary containment test that failed on March 8, 1993. UNRUH said he was not aware that a TPCN was done that same date to allow the detensioning of the RPV head bolts (Exhibit 40, p. 2).
- INVESTIGATOR'S NOTE: UNRUH was provided copies of the three 1993 PCNs (Exhibit 14, 15, and 16) for his review.
141. UNRUH stated he had not previously seen the PCNs that were revised on March 9, 1993. UNRUH said he became aware of these PCNs on March 9, 1993, which deleted the requirement for secondary containment. UNRUH said he could not recall who told him these revisions had been made. UNRUH said he thought the revisions were only temporary to continue RPV disassembly without having secondary containment operable (Exhibit 40, p. 2).
142. UNRUH stated he is responsible for RPV disassembly and that he approved the original PCNs in 1991 as the responsible manager, technical reviewer, and SORC member. UNRUH said he did not raise any questions or have any discussion when told the secondary containment requirement during RPV disassembly was deleted in 1993 (Exhibit 40, p. 2).
143. UNRUH said, in his opinion, you did not need secondary containment during RPV disassembly until you began to lift the dryer and separator (Exhibit 40, p. 3).
144. UNRUH stated that YOUNG did the technical review on the 1993 PCNs that removed the secondary requirement for the head, dryer, and separator. UNRUH said he did not know about the PCNs (Exhibit 40, p. 3).
145. UNRUH said the new PCNs cited NUREG 0612 as had the original PCNs, and he did not know what had changed during that time. UNRUH said NUREG 0612 does not address secondary containment, and PRC 88-11 does not quantify load weight (Exhibit 40, p. 3).

INVESTIGATOR'S NOTE: UNRUH provided a copy of the CNS Shift Coordinator's Meeting Minutes for March 8, 1993, through March 12, 1993. There were also several questions regarding the decision to proceed without secondary containment, and UNRUH appeared confused and could not answer these questions. It was pointed out to UNRUH that he had stated he was responsible for RPV disassembly. Further, the minutes of the March 10, 1993, Shift Coordinator's Meeting at 1830 [6:30 p.m.] reflected he was present. These same minutes reflect that GARDNER gave the approval of that date to move the separator without secondary containment (Exhibit 19).

146. UNRUH said he did not object when all three loads were moved without secondary containment because he assumed management made the correct decision. UNRUH acknowledged GARDNER was the SORC chairman, and UNRUH was sure GARDNER consulted someone else on the issue. UNRUH said he did not talk to GARDNER about the secondary containment issue at the time (Exhibit 40, p. 3).
147. UNRUH stated that PRC 88-11 "clouded" this whole issue, particularly in the way they were thinking about secondary containment requirements. UNRUH admitted that nothing has been done to remove that "cloud." UNRUH said he was sure management will do something about the situation (Exhibit 40, p. 4).
148. ESTES said he is a CNS management trainee who was the weekend CNS outage director and the acting manager of operations during March/April 1993. ESTES stated he was aware the secondary containment test failed on March 8, 1993. ESTES said it eventually passed on March 11, 1993 (Exhibit 41, p. 1).
149. ESTES stated that FLAHERTY made the presentation of three PCNs at the SORC meeting on March 9, 1993, and said there was a lot of discussion for about a half hour. ESTES said, by the end of the discussion, he was comfortable with the changes and everyone agreed to the changes (Exhibit 41, p. 1).
150. ESTES stated, as a SORC member, he approved PCNs 7.4.4, Revision 20; 7.4.5, Revision 18; and 7.4.6, Revision 19. ESTES stated he also signed 7.4.4 as a technical reviewer, but not the other two PCNs (Exhibit 41, p. 2).
151. ESTES stated he did not recall the SORC meeting adjourning after approving 7.4.4 and returning to a second meeting to approve the last two PCNs (Exhibit 41, p. 2).
152. ESTES stated that FOUST had some doubts about deleting the secondary containment requirements, but this was not a "big problem" since GE conducted an analysis in April 1993. ESTES said the analysis showed no damage to the fuel from dropping of the RPV head, dryer, or separator.

ESTES said GE had performed the test previously at five or six other plants and CNS management [MEACHAM or HORN] ordered the analysis to be "prudent" (Exhibit 41, p. 2).

153. ESTES said there were several items of information presented to the SORC meeting, including NUREG 0612. ESTES said NUREG 0612 requires a specific analysis for each load moved over irradiated fuel or a program where lifting equipment is in pristine condition (Exhibit 41, p. 2).
154. ESTES said the SORC meeting also looked at PRC 88-11 which only addressed light loads. ESTES stated SORC meeting looked at a memorandum from LONG, dated 1985 to 1987, which said secondary containment was not required until fuel handling (Exhibit 41, p. 2).
155. ESTES said the SORC meeting also had the knowledge that GE had conducted analyses for other plants and secondary containment was not required. ESTES said the same would apply to CNS, it was just a matter of paying for an analysis (Exhibit 41, p. 2).
156. ESTES stated he had never read NUREG 0612 or PRC 88-11 before or during the SORC meeting, and he depended on FLAHERTY's presentation to the SORC meeting (Exhibit 41, pp. 2 and 3).
157. ESTES said he did read GE's telecon at the SORC meeting, and it implied that PRC 88-11 did not apply to heavy loads, but it did mention secondary containment. ESTES said GE was not asked whether secondary containment was needed to move the three loads (Exhibit 41, p. 3).
158. ESTES said he did read the LONG memorandum at the SORC meeting. However, ESTES said he had no direct or specific knowledge of GE's analyses at other BWR plants. ESTES said he was not sure if these analyses had been discussed at the SORC meeting (Exhibit 41, p. 3).
159. ESTES said he did not recall anyone suggesting the NRC be contacted about the failed test or the PCN changes. ESTES said the resident inspector cannot interpret tech specs, and they would normally talk to the NRC project manager. ESTES said he did not know why the NRC was not contacted (Exhibit 41, p. 3).
160. ESTES said the three PCNs were not tech spec changes, and there were no tech spec changes on the table at the SORC meeting. ESTES then reviewed the three PCNs and said he did not know why item 5 was marked "yes" as a tech spec change. ESTES said he did not realize it was a tech spec change though he had approved them as a technical reviewer and SORC member (Exhibit 41, p. 3).

INVESTIGATOR'S NOTE: ESTES reviewed Amendments 147 and 150 and recalled there was some discussion of those amendments. ESTES was

asked what these two amendments cited as the justification on all three 1993 PCNs had to do with removing the secondary containment requirement.

161. ESTES said there was some discussion regarding Amendments 147 and 150 at the SORC meeting. ESTES said he recalled reading these amendments at the SORC meeting as well as at other times. ESTES said he could not recall the basis FLAHERTY used to cite these amendments and to use them in support of a tech spec change (Exhibit 41, p. 3).
162. ESTES said he would not use the word "faulty" to describe these PCNs. ESTES said he did sign them as he technically had "no problem" with what CNS was doing (Exhibit 41, p. 3).
163. ESTES said these PCNs were not tech spec changes, and these amendments were only offered as background information (Exhibit 41, p. 4).

INVESTIGATOR'S NOTE: ESTES was asked why he did not tell the inspection team about the PCNs and the movement of the three loads over irradiated fuel without secondary containment.
164. ESTES stated CNS believed only the failure of the secondary containment test on March 8, 1993, was significant and reported only that to the NRC inspection team (Exhibit 41, p. 4).
165. ESTES stated he never told the inspection team, but in hindsight, the SORC meeting should not have approved the changes because the SORC meeting was not 100 percent "sold" on the changes (Exhibit 41, p. 4).
166. ESTES admitted he told the inspection team, with the RPV head bolts detensioned, it was safer to proceed with disassembly and flood the cavity rather than wait for secondary containment. ESTES when asked why they put themselves in that position, responded he did not want to answer for other people. ESTES said he could not answer why he told the inspection team about it being safer to flood up. ESTES said the PCNs had already been approved, and CNS had already stated that secondary containment was not necessary (Exhibit 41, p. 4).
167. ESTES stated he did not know at the March 9, 1993, SORC meeting that the bolts had been detensioned (Exhibit 41, p. 4).
168. ESTES, after being shown the Shift Coordinators Meeting Minutes for March 8, 1993, stated he knew at the SORC meeting the bolts had been detensioned and there was no secondary containment (Exhibit 41, p. 4).
169. ESTES said he did not remember going through the logic at the SORC meeting that since the bolts were detensioned, CNS had to implement the PCNs to be in a safer condition (Exhibit 41, p. 5).

170. ESTES stated the "extensive documentation review" cited in the SORC meeting minutes of March 9, 1993 (Exhibit 18) was applicable to Engineering, not the SORC meeting (Exhibit 41, p. 5).
- INVESTIGATOR'S NOTE: MACE reviewed a copy of NPPD Proposal No. 68 (Exhibit 9) and NRC approved Amendment 147 (Exhibit 10) and said he recalled these documents.
171. MACE stated he was at the SORC meeting that approved NPPD Proposal No. 68 (Exhibit 42, p. 1).
172. MACE stated he vaguely recalled the FOUST memorandum to BALLINGER dated December 12, 1988, regarding the NPPD analysis of GE PRC 88-11. MACE said that both BALLINGER and FOUST worked for him at the time (Exhibit 42, p. 1).
173. MACE stated that he did not recall anything other than PRC 88-11 when approving NPPD Proposal No. 68, the tech spec change. MACE said PRC 88-11 and the three 1991 PCNs are what "drove" Proposal No. 68 (Exhibit 42, p. 1).
174. MACE said, in 1991, he was in training for 11 months and was not at the SORC meeting pertaining to the 1991 PCNs (Exhibit 42, p. 1).
175. MACE stated, on March 9, 1993, he did both a technical review for site support and SORC meeting approval for PCNs 7.4.4, Revision 20; 7.4.5, Revision 18; and 7.4.6, Revision 19 (Exhibit 42, p. 2).
176. MACE stated FLAHERTY made the PCN presentation to the March 9, 1993, SORC meeting. MACE said FLAHERTY provided supporting documents, including a GE telecon record, an engineering package, a memorandum from LONG, and other documents which he [MACE] could not recall (Exhibit 42, p. 2).
177. MACE said NUREG 0612 was used in both sets of PCNs. MACE stated that in the 1991 PCNs, it made secondary containment a requirement and was added as a reference. MACE said in the 1993 PCNs, it removed the requirement for secondary containment and clarified that PRC 88-11 and NUREG 0612 were "two separate entities." MACE added "PRC 88-11 was talking heavy loads but not like NUREG 0612" (Exhibit 42, p. 2).
178. MACE said the GE telecon record indicated that PRC 88-11 and NUREG 0612 are separate entities. MACE stated PRC 88-11 said GE had a concern for heavy loads being moved over irradiated fuel. MACE said "heavy load" is open for interpretation depending on the engineer and the utility (Exhibit 42, p. 2).
179. MACE said he did not know if a load analysis had been done to determine the weight that would damage fuel. MACE added he did not worry about

such analysis being done before revising the PCNs. MACE said the author of PRC 88-11 stated it addressed a load of less than 1000 pounds (Exhibit 42, p. 2).

180. MACE stated the revised PCNs were not tech spec changes. MACE, when referred to item 5 on the 1993 PCNs, admitted the PCNs were checked as tech spec changes. MACE said because Amendments 147 and 150 are also cited in item 5, the SORC meeting could approve this change. MACE said the amendments reflect prior NRC approval (Exhibit 42, p. 3).

INVESTIGATOR'S NOTE: MACE was asked how Amendment 147 could support the removal of secondary containment requirements when it added the requirements to tech specs. MACE stated he wanted to check his tech specs and left the room to get his tech specs. It was also pointed out to MACE that Amendment 150 deleted a requirement in the BASES to do a secondary containment test before opening primary containment. This brought the BASES into agreement with the surveillance requirement. The surveillance requirement had never required such a test before opening primary containment.

181. MACE stated that he would not have signed his SORC meeting approval if it were today based on Amendments 147 and 150 as the basis. MACE stated he would give his approval because there was a sound basis for deleting the requirement (Exhibit 42, p. 3).
182. MACE said that the PCNs may be in error as they were not tech specs changes, and Amendments 147 and 150 were inappropriate. However, MACE said he did not have a problem that these PCNs were completed and approved in less than 1 day (Exhibit 42, p. 3).
183. MACE said the SORC meeting discussed the three 1993 PCNs for about 1/2 hour before giving approval. MACE stated all three PCNs were discussed at the same meeting. MACE said he did not remember going back a second time to approve two of the PCNs as reflected in the March 9, 1993, SORC meeting minutes (Exhibit 42, p. 3).
184. MACE stated they were "rushed" because they were on an outage schedule. MACE said he was telephoned and told work had stopped on the floor, and the RPV head could not be pulled because secondary containment was not operable. MACE stated he was the outage director when this occurred. MACE stated he told them, "bullshit, there is no goddamn way that can be a problem." MACE said he then looked at procedures and realized secondary containment was required (Exhibit 42, pp. 3 and 4).
185. MACE said the 7.4xx procedures had been put in by "oversight" or "over zealotness." MACE stated it was common sense, adding there is no way you could drop a head and hit the fuel, "it was like a square peg in a round hole" (Exhibit 42, pp. 2 and 3).



186. MACE stated he was the one to initiate the PCN change request as he was the outage director at the time, adding he had talked to GARDNER. MACE said that he could not recall if GARDNER agreed, but would have recalled if GARDNER had disagreed (Exhibit 42, p. 4).
187. MACE, when told this sounded like an order rather than a request for an interpretation, responded that if any of the people below him disagreed, they would have told him he was wrong (Exhibit 42, p. 4).
188. MACE said secondary containment is not necessary during RPV disassembly until you actually touch the fuel or core internals. MACE said the SORC meeting had a lot of discussion and eventually all SORC members agreed to the revised PCNs (Exhibit 42, p. 4).
189. MACE stated that it was the failure of the secondary containment test on March 8, 1993, that resulted in the telephone call that work had to be stopped on RPV disassembly. MACE said he knew on March 8, 1993, about the TPCN that allowed the RPV head bolts to be detensioned while they continued to try to establish secondary containment. MACE stated that when secondary containment was not established on March 9, 1993, he told them to change the procedures and delete the secondary containment requirement (Exhibit 42, p. 4).
190. MACE acknowledged the secondary containment test passed in the evening of March 11, 1993, so CNS only saved 2 days by changing procedures. MACE stated this translates to about \$500,000 a day when CNS is down, in both costs and lost revenues (Exhibit 42, p. 5).

INVESTIGATOR'S NOTE: MACE was interviewed a second time under oath and transcribed on December 13, 1993. The following items related to MACE are from that testimony.

191. MACE stated he was the CNS engineering manager and FOUST's supervisor in December 1988. MACE stated that he would have reviewed and approved FOUST's memorandum (Exhibit 5) and then sent the recommendation forward (Exhibit 43, pp. 8 and 9).
192. MACE said that with the FOUST memorandum, Engineering decided how changes should be done and Maintenance carried out the execution of the Engineering decision. MACE stated Maintenance made the appropriate 7.4xx procedure changes and to his recollection, no one came back to him and said these procedures were too "burdensome" (Exhibit 43, pp. 11, 12, and 13).
193. MACE stated that PCNs 7.4.4, 7.4.5, and 7.4.6, all dated as approved in 1991, were as a result of FOUST's memorandum. MACE said the PCNs put into effect the requirement for secondary containment during RPV disassembly (Exhibit 43, p. 15).

194. MACE said NPPD Proposal No. 68, dated July 18, 1991, was a request to the NRC (Exhibit 9) for a tech spec change to section 3.7.C. MACE said it added that no loads which could potentially damage irradiated fuel were to be moved without secondary containment (Exhibit 43, pp. 16 and 18).
195. MACE stated this proposal was approved by the NRC as Amendment 147 (Exhibit 10) to CNS tech specs (Exhibit 43, p. 23).
196. MACE stated that NPPD Proposal No. 95 (Exhibit 11) was approved by the NRC as Amendment 150 (Exhibit 12) on November 22, 1991 (Exhibit 43, pp. 23 and 24).
197. MACE agreed that Amendment 150 deleted a requirement in the BASES to do a secondary containment test before opening primary containment. MACE said the BASES is an amplification of tech specs. MACE said, in this case, it brought the BASES into agreement with the tech spec surveillance requirement (Exhibit 43, pp. 25, 26, and 27).
198. MACE stated he reviewed and approved 7.4.4. Revision 20, in 1993, as a technical reviewer and a SORC member (Exhibit 43, p. 32).
199. MACE said he did not perform the technical review or SORC meeting approval on the other two 1993 PCNs, as they were reviewed at a second meeting on March 9, 1993. MACE said he did not get involved in the second meeting due to his capacity as outage director. MACE said he did not recall telling the NRC at his first interview that the three PCNs were discussed and approved at the same meeting (Exhibit 43, pp. 32 and 33).
200. MACE admitted, at his first interview, he told the NRC that he had responded "bullshit, there is no goddamn way that can be a problem," when told work had been stopped because secondary containment could not be established (Exhibit 43, p. 36).
201. MACE admitted the original PCNs, that put in the requirement for secondary containment, were a result of oversight or over zealotness (Exhibit 43, p. 36).
202. MACE stated there was "no way" for the RPV head to drop and hit the fuel, it was like a "square peg in a round hole" (Exhibit 43, pp. 36 and 37).
203. MACE acknowledged it was an "oversight" and "over zealotness" on his part in 1991 when the original PCNs were approved. MACE said he did not recognize the intent of PRC 88-11 or FOUST's memorandum, and he had not reviewed them in detail (Exhibit 43, p. 37).

INVESTIGATOR'S NOTE: MACE did not respond when questioned why he claimed "over zealotness" on the 1991 PCNs and not on the 1993

PCNS. It was pointed out to MACE the original PCNs had taken 10 months to go through the cycle and the new PCNs, which used the same basis [NUREG 0612 and PRC 88-11], took 1 day to be reviewed and approved (Exhibit 43, pp. 37 and 38).

204. MACE stated he made his comment about "bullshit" after he was informed that RPV disassembly had stopped. MACE said they were ready to detension the bolts, but could not establish the required secondary containment. MACE said the prerequisite to establish secondary containment "just didn't seem logical" (Exhibit 43, pp. 42 and 43).
205. MACE said, after learning secondary containment was inoperable, he talked to GARDNER, and they decided this procedure was not correct as written. MACE said he assumed GARDNER talked to the engineering manager about the procedure change. MACE said GARDNER just took this assignment upon himself, and he [MACE] went back to his outage duties (Exhibit 43, pp. 43 and 44).
206. MACE said that TPCN 7.4.4, dated March 8, 1993 (Exhibit 13) was signed by GARDNER, and it allowed the detensioning of the RPV head bolts (Exhibit 43, pp. 45 and 47).
207. MACE said that by detensioning the bolts, they were not in a less safe situation if a problem arose. MACE said it would be easier to back up than go forward. MACE said it would be easier to retighten the 52 studs than pull the head, pull the RPV internals, and "flood up" the RPV (Exhibit 43, p. 49).
208. MACE, when told CNS officials had informed the NRC inspection team it would be safer to go forward, stated his position on the issue was based on an accident scenario. MACE said without an accident there would be no reason to go back, and he would proceed forward (Exhibit 43, p. 50).
209. MACE, when confronted with his August 1993 testimony to the NRC that he initiated the three PCNs, stated he did not initiate the changes. MACE said he only had the discussion with GARDNER on March 8, 1993, where they decided the procedures were not right. MACE said he did not initiate the changes (Exhibit 43, p. 52).
210. MACE again stated he did not initiate the three PCNs in 1993 and assumes GARDNER, talking to FLAHERTY, orchestrated the changes. MACE said he could not recall telling the reporting investigator, in August 1993, that he was the one to initiate the changes (Exhibit 43, pp. 54 and 55).
211. MACE stated when he and GARDNER discussed that procedure 7.4.4 was wrong, his [MACE] basis was that it was not logical that the RPV head could hit the fuel. MACE said it was the square peg in the round hole concept and claimed that it was "cognitive knowledge" on his part (Exhibit 43, pp. 57 and 58).

212. MACE, when asked what changed his opinion about the need for secondary containment between his approving the FOUST memorandum and the March 8, 1993, outage, stated nothing changed in his mind. MACE discussed at some length about the volume of paper that crosses his desk in a year. MACE said he did see PRC 88-11 and the FOUST memorandum, but these issues just did not cross his mind at the time (Exhibit 43, pp. 60 and 61).
213. MACE stated TPCN 7.4.4 was done solely to keep the outage moving. MACE said that the three PCNs, in 1993, were to keep the outage moving. MACE said it was because there was a concern to move quickly from a cold shutdown to a "flooded up" condition, a safer situation (Exhibit 43, p. 65).
- INVESTIGATOR'S NOTE: MACE's response in Evidence Item 212 indicating that it was safer to move forward is the opposite of his responses listed in evidence items 206 and 207, where he said it would be easier to back up than go forward.
214. MACE stated in the 1993 PCNs, item 5, reflects the PCNs caused a change to tech specs (Exhibit 43, p. 67).
215. MACE said that with a PCN that changes tech specs, the SORC meeting cannot approve the change without NRC approval. MACE added that this NRC approval may have been previously approved in the form of an amendment (Exhibit 43, pp. 68 and 69).
216. MACE stated that in the 1993 PCNs, item 5 reflects Amendments 147 and 150. MACE said these amendments were the PCN changes previously approved by the NRC (Exhibit 43, p. 69).
217. MACE stated Amendment 147 increased the requirement for secondary containment when moving any load over irradiated fuel that could potentially cause damage if dropped. MACE admitted Amendment 147, as shown on the three 1993 PCNs, was in error. MACE said Amendment 147 added the requirement rather than deleting the requirement as the PCNs state (Exhibit 43, pp. 69 and 70).
218. MACE said that Amendment 150 had nothing to do with removing secondary containment during RPV disassembly as shown on the three PCNs for 1993. MACE said Amendment 150 brought the BASES into agreement with the surveillance requirements of the tech specs (Exhibit 43, pp. 74 and 75).
219. MACE admitted that, based on the information shown in item 5 on the three PCNs for 1993, the SORC meeting was in error for approving these PCNs (Exhibit 43, p. 76).
220. MACE admitted that the written justification on the three 1993 PCNs do not include his rationale for deleting the secondary containment

requirements. MACE said it does not mention or allude anywhere in the written justification there is not a problem because "you can't put a square peg in a round hole" (Exhibit 43, p. 79).

INVESTIGATOR'S NOTE: MACE had acknowledged that the 1993 PCNs were not tech spec changes. MACE said Amendments 147 and 150 did not support the changes, and his rationale for deleting the requirement was not in the written justification. MACE also acknowledged not reading Amendments 147 and 150 before or at the SORC meeting. MACE was asked why he signed these 1993 PCNs as a technical reviewer and SORC member and what he had done as a technical reviewer. MACE did not provide a definitive answer (Exhibit 43, pp. 80, 81, 82, and 83).

221. MACE acknowledged that the LONG memorandum (Exhibit 2) had already been received and considered when CNS wrote Proposal No. 68 (Exhibit 9) which resulted in the NRC approved Amendment 147 (Exhibit 10). MACE also acknowledged that the LONG memorandum was cited in the 1993 PCNs (Exhibit 43, pp. 91 and 92).

INVESTIGATOR'S NOTE: The NPPD Proposal No. 68 stated CNS had considered previous documents and inspections; however, they were going to be conservative and require secondary containment. This proposal was dated the same date they approved the 1991 PCNs for the RPV head and dryer, which required secondary containment. In the 1993 PCNs, they again cited LONG's memorandum to remove the secondary containment requirements. MACE did not know why the LONG memorandum was cited in both reviews: one to add requirements, the other to remove the same requirements. MACE said he would have to look at the SORC meeting minutes (Exhibit 43, p. 92).

222. MACE admitted that PRC 88-11 and the analysis done by FOUST reported there was no load weight analysis, and GE told the various power plants to do the analysis (Exhibit 43, p. 9).
223. MACE stated that on March 8 and 9, 1993, he did not violate tech specs to move the outage. MACE said the 3.7.C. tech spec issue addresses loads and NUREG 0612 is a separate issue. MACE said NUREG 0612 ensures his lifting equipment and crane have a safety factor (Exhibit 43, pp. 102 and 103).
224. MACE said he was not aware of any analysis CNS had done to determine what load weight would damage fuel if dropped (Exhibit 43, p. 105).
225. MACE said CNS had not done any analysis to determine if damage would be done if parts of the load or RPV broke off and dropped on the fuel. MACE said part of the RPV head breaking off would not happen, based on common sense, which he said is an acceptable basis (Exhibit 43, pp. 106 and 107).

226. MACE admitted that NUREG 0612 does not completely eliminate potential to damage irradiated fuel (Exhibit 43, p. 109).

INVESTIGATOR'S NOTE: There was a lengthy discussion of what changed in MACE's mind. Specifically, between the time he was the engineering manager and approved FOUST's memorandum and March 8, 1993, when he and GARDNER agreed that secondary containment was not necessary. MACE finally responded it was "common sense" (Exhibit 43, pp. 111 - 116).

227. MACE said he could not recall if the SORC meeting, on March 9, 1993, discussed if the RPV head, dryer, and separator had the potential to damage fuel. MACE said he understood that it had been the SORC's responsibility to determine whether those evolutions met the regulatory requirement (Exhibit 43, p. 119).
228. MACE stated that on March 8 and 9, 1993, he did not suggest the NRC be contacted, and he did not know if anyone else made the suggestion (Exhibit 43, p. 120).
229. MACE admitted that FOUST noted in his memorandum that NUREG 0612 does not address the concern of PRC 88-11 and that no other calculation had been performed to determine the weight load. MACE agreed that no other calculation had been performed, adding that FOUST assumed the range to be 300 pounds. MACE added that still left him with the opinion that PRC 88-11 was dealing with light loads. MACE did not respond when asked how he knew it was only light loads (Exhibit 43, p. 136).
230. MACE stated that when he and GARDNER decided on March 8, 1993, that secondary containment was not necessary, PRC 88-11 and FOUST's memorandum were 5 years old and were "not in the back of my mind" (Exhibit 43, p. 137).
231. MACE admitted PRC 88-11 and FOUST's memorandum led to the 1991 PCNs and to Amendment 147, which put in the secondary containment requirements (Exhibit 43, p. 138).

INVESTIGATOR'S NOTE: MACE was asked if he were going to reverse procedures why didn't he look at the basis for the existing procedures. MACE had also just testified that he was not thinking of PRC 88-11 or FOUST's memorandum on March 8, 1993, when he and GARDNER decided secondary containment was not necessary. MACE was confronted that he had an apparent lack of understanding of the bases that went into the 1991 PCNs and later into tech specs. MACE responded as follows:

232. MACE said, during the March 9, 1993, SORC meeting, they reviewed the 1993 PCNs and the difference between PRC 88-11 and NUREG 0612 (Exhibit 43, p. 138).

233. GARDNER stated he has been the plant manager at CNS since July 1992 and was the senior manager of operations from June 1991 until he assumed his present position. GARDNER said he was the maintenance manager from March 1989 until June 1991 (Exhibit 44, p. 5).
234. GARDNER stated he approved PCNs 7.4.4, Revision 20; 7.4.5, Revision 18; and 7.4.6, Revision 19, as the SORC Chairman (Exhibit 44, pp. 6 and 7).
235. GARDNER stated these PCNs were revisions to tech specs and said FLAHERTY explained to the SORC members that he [FLAHERTY] marked these PCNs as tech spec changes as these procedures had previously been affected by license changes (Exhibit 44, p. 7).
236. GARDNER stated this meant that the NRC, through prior amendments to the license, approved the changes in these PCNs. GARDNER stated the amendments shown on the PCNs were Amendments 147 and 150 (Exhibit 44, pp. 7 and 8).
237. GARDNER stated that FLAHERTY told him that Amendments 147 and 150 removed the requirements to demonstrate secondary containment before primary containment is open for refueling. GARDNER said the SORC meeting reviewed these two amendments, and they found no problem with these amendments as written in FLAHERTY's justification (Exhibit 44, p. 8).
238. GARDNER said the LONG memorandum had previously stated (Exhibit 2) that it was not necessary to have secondary containment before performing fuel movement (Exhibit 44, pp. 9 and 10).
- INVESTIGATOR'S NOTE: NPPD Proposal No. 68 (Exhibit 9) and NRC approved Amendment 147 were provided to GARDNER and he reviewed these documents.
239. GARDNER, after some discussion and review, stated that Amendment 147 increased the requirement for secondary containment (Exhibit 44, pp. 11 and 12).
240. GARDNER stated that FLAHERTY's written justification on these PCNs wherein he [FLAHERTY] stated Amendment 147 removed the requirements for secondary containment are inaccurate or incomplete (Exhibit 44, p. 13).
241. GARDNER stated that he and the eight other members of the SORC did not "catch" this inaccuracy and added it was probably an oversight (Exhibit 44, pp. 13 and 14).
242. GARDNER, after further review and discussion of NPPD Proposal No. 68 and Amendment 147, admitted CNS had taken LONG's memorandum (Exhibit 2) into consideration when writing this proposal. GARDNER acknowledged that

Amendment 147 added tech spec 3.7.C.1.d, secondary containment requirements. GARDNER acknowledged Amendment 147 occurred after LONG's memorandum (Exhibit 44, pp. 15, 16, and 17).

INVESTIGATOR'S NOTE: NPPD Proposal No. 95 (Exhibit 11) and NRC approved Amendment 150 were provided to GARDNER and he reviewed these documents.

243. GARDNER stated Amendment 150 changed the BASES only and did not change the surveillance requirements or the LCO of the tech specs. GARDNER admitted that Amendment 150 did not remove any secondary containment requirements (Exhibit 44, pp. 17 and 18).
244. GARDNER admitted that contrary to FLAHERTY's written justification on the three PCNs, Amendment 150 did not remove secondary containment. GARDNER said none of the SORC members caught this error (Exhibit 44, pp. 18 and 19).
245. GARDNER also admitted that using NRC inspection report IR 88-07, which included the LONG memorandum of not needing secondary containment until touching the fuel, would also be inaccurate. GARDNER acknowledged that the LONG memorandum was previously considered when secondary containment requirements were added with Amendment 147 (Exhibit 44, pp. 19 and 20).
246. GARDNER stated he recalled the FOUST memorandum (Exhibit 5) as the NPPD response to PRC 88-11 (Exhibit 4). GARDNER said it was used as the basis for adding the secondary containment requirements to procedures in 1991 and eventually to Amendment 147 (Exhibit 44, p. 21).
247. GARDNER stated that PRC 88-11 did inform the individual plants to determine if a problem exists, and FOUST performed an evaluation. GARDNER acknowledged FOUST's actions resulted conservatively in the requirement for secondary containment (Exhibit 44, pp. 22 and 23).
248. GARDNER stated, based on PRC 88-11 and before the 1993 PCNs, CNS did do an analysis. GARDNER said it was not a "deterministic analysis," that use numbers to determine what weight would be acceptable. GARDNER said they did a more thorough review of PRC 88-11 and talked to other plants with similar GE designs (Exhibit 44, pp. 23 and 24).
249. GARDNER said CNS did not make any of these changes before March 1993 because there was no reason to question the prior content before secondary containment failed. GARDNER said the secondary containment failure caused CNS to reevaluate their determination (Exhibit 44, p. 24).
250. GARDNER admitted there was no analysis done at CNS to determine the weight or height that would damage fuel (Exhibit 44, p. 25).



251. GARDNER said the engineering staff made the decision to change the PCNs. GARDNER said he and MACE did not independently make the decision to change the PCNs. GARDNER said he did not know why MACE told the reporting investigator that they made the decision to change the PCNs (Exhibit 44, p. 25).
252. GARDNER stated BRATRSOVSKY initiated TPCN 7.4.4 (Exhibit 13) on March 8, 1993, and as soon as his [BRATRSOVSKY] supervisor signed it, it became effective. GARDNER stated he signed it as a review process which must be done within 30 days. GARDNER acknowledged he signed it that same date, but could not recall if he directed YOUNG to write this TPCN [YOUNG was BRATRSOVSKY's supervisor] (Exhibit 44, p. 26).
253. GARDNER stated that his concern on March 8, 1993, was that this was the first year they had instituted some very strict shutdown risk of management tools. GARDNER said they were more susceptible to an accident having severe consequences in the condition of waiting for secondary containment than being able to flood up the RPV inventory (Exhibit 44, p. 27).
254. GARDNER said he was first advised of the inoperability of secondary containment by MACE, and they probably had a discussion at the time. GARDNER said he could not remember if he told MACE that they did not need secondary containment. He said he probably told him they should review this situation and see if they could do something. GARDNER said he next asked Engineering to perform an evaluation of CNS procedures against PRC 88-11 (Exhibit 44, pp. 29 and 30).
255. GARDNER said he had conversation with MEACHAM and HORN on March 8, 1993, about this issue. GARDNER said they told him they thought there was a letter from GE in the file that stipulated it was acceptable to remove the head without secondary containment. GARDNER said the files were searched for 6 hours, but the letter could not be found. GARDNER said HORN and MEACHAM did provide the fact that LONG had written a memorandum about refueling operations (Exhibit 44, pp. 30 and 31).
256. GARDNER acknowledged that the LONG memorandum was considered in Amendment 147, and they could not change tech specs without NRC approval. GARDNER said they could evaluate PRC 88-11 as that is what went through the Safety Review and Audit Board (SRAB) regarding Amendment 147. GARDNER said he recalled HORN at the SRAB wanting to add that statement to reflect the PRC 88-11 considerations (Exhibit 44, pp. 31 and 32).
257. GARDNER said BLACK provided a GE telecon record (Exhibit 17) that stated NUREG 0612 stipulated which loads were acceptable for movement. GARDNER said the GE telecon record also told them PRC 88-11 was a fuel bundle or less in weight (Exhibit 44, p. 32).

INVESTIGATOR'S NOTE: The argument that the weight of a fuel bundle, about 750 pounds or less is the only load that could damage fuel, seems questionable. The argument suggests anything weighing more than a fuel bundle would not damage fuel. Therefore, it was acceptable to move the three internals whose movement is covered by NUREG 0612.

The other part of the argument by CNS is that configuration would not allow these internals to hit the fuel if dropped and does not allow for yielding. Specifically, it does not consider the consequences of a part of the load or RPV breaking off, such as a stud, which is smaller and thus able to hit the fuel. One of these parts could weigh more than 750 pounds [the RPV head weighs 46 tons] and could possibly damage the fuel. NUREG 0612 does not address secondary containment nor remove the possibility of a drop, though it reduces the chances of such an occurrence. The tech spec however talks about "potential," and NUREG 0612 did not remove the "potential."

258. GARDNER, after reviewing GE's April 13, 1993, memorandum (Exhibit 20), stated he recalled BLACK telling either him or the SORC meeting that the changes suggested by CNS would not be made to the memorandum. GARDNER said BLACK told him it would make the GE response plant specific, and GE had not done an analysis for CNS. GARDNER said the writing on the bottom of the draft GE memorandum was MEACHAM's (Exhibit 44, pp. 34, 35, and 36).
259. GARDNER stated that CNS did employ GE after April 13, 1993, to do an analysis at CNS. GARDNER stated this was ordered to justify the position that CNS had taken and to utilize the information for future removals (Exhibit 44, p. 36).
260. GARDNER was asked what CNS had done between the 1991 PCNs and the 1993 PCNs, both of which cited NUREG 0612 and PRC 88-11 to add then delete the secondary containment requirements. GARDNER stated they had not done a numerical analyses, but had reviewed NUREG 0612, PRC 88-11, and LONG's memorandum (Exhibit 44, p. 38).

INVESTIGATOR'S NOTE: GARDNER stated that the 1991 PCNs were overly conservative. It was pointed out to GARDNER that the 1991 PCNs took 10 months, and they had a separate technical and SORC meeting review so more people reviewed them. The 1993 PCNs took about 3 1/2 hours to initiate, review, and approve. They were technically reviewed and approved by the SORC members. GARDNER had already admitted there were several errors and inaccuracies on the 1993 PCNs, and was asked why 1991 was so conservative versus the 1993 PCNs. GARDNER did not directly respond to the comparison question, but reiterated their review of PRC 88-11, NUREG 0612, and the results of a conversation BALLINGER had with GE (Exhibit 44, p. 39).

261. GARDNER said that right after the SORC approved these 1993 PCNs, FOUST told him, he objected to the changes. GARDNER said he told FOUST they had reviewed PRC 88-11 and determined FOUST's interpretation had been overly conservative. GARDNER added that CNS was still complying with the intent of PRC 88-11 (Exhibit 44, pp. 40 and 41).
262. GARDNER said, unfortunately it did not cross his mind to contact the NRC at the time (Exhibit 44, p. 44).
263. GARDNER stated the 1993 PCNs were not tech spec changes. GARDNER was asked if Amendments 147 and 150 did not support the 1993 PCNs, would the NRC have to be contacted. GARDNER said the PCNs were an interpretation of tech specs. GARDNER added that item 5, on the PCNs, was marked "yes." GARDNER said it was very ambiguous and there was very little procedural guidance as to what "yes" and "no" stipulated, what it actually meant (Exhibit 44, p. 45).
- INVESTIGATOR'S NOTE: The PCN forms used were prepared by and for CNS.
264. GARDNER, when asked if these changes were made only to move the RPV disassembly, stated it was evaluated, and it was determined they could move forward. GARDNER said the determination was made sometime before this event. GARDNER said however until this event, there was no "driving force" to make the changes and that there had not been a hot core sitting with minimal fuel (Exhibit 44, p. 46).
265. GARDNER admitted that the tech specs in the LCO did not make a distinction between heavy or light load weights. GARDNER stated that the part of the tech specs which read "with the potential to damage irradiated fuel" were taken verbatim from PRC 88-11. GARDNER said it was easy to make the connection to PRC 88-11 (Exhibit 44, pp. 47 and 48).
266. GARDNER acknowledged, after reviewing the NRC safety evaluation attached to Amendment 147, the NRC did not make a differentiation between light and heavy loads. GARDNER further admitted that NUREG 0612 does not eliminate the potential for damage to the fuel, but said that in his view, it minimizes the potential (Exhibit 44, pp. 49 and 50).
267. GARDNER stated that SORC meeting discussed and determined the lifting of the RPV head, dryer, and separator did not have the potential to damage irradiated fuel. GARDNER said this SORC meeting discussion and conclusion was not documented (Exhibit 44, p. 52).
268. GARDNER said the SORC's basis for determining there was no potential to damage fuel was the LCO for secondary containment which addresses actions prior to refueling or for loads which have the potential to damage irradiated fuel. GARDNER said NUREG 0612, which discusses the

three internals [RPV head, dryer and separator], which were not within the confines and PRC 88-11, and was the genesis for the addition of those words to the tech spec (Exhibit 44, p. 53).

269. GARDNER stated he believes the tech specs loads that have the potential to damage irradiated fuel is limited to loads of less than 750 pounds (Exhibit 44, pp. 53 and 54).

INVESTIGATOR'S NOTE: GARDNER argues that the RPV head, dryer, and separator are covered by NUREG 0612, and PRC 88-11 addresses loads of a weight less than the internals. PRC 88-11 applies to Amendment 147, and these three loads are not governed by tech specs. GARDNER's argument conflicts with NUREG 0612, which addresses lifting equipment, and PRC 88-11 which addresses damage to fuel.

270. GARDNER said he could not recall if he talked to the people responsible for instituting the original PCNs [1991] when CNS was making the changes in 1993. GARDNER said it would not have been necessary, because in 1988 as the maintenance manager, he was involved in the review of PRC 88-11 (Exhibit 44, p. 60).
271. GARDNER said the 1991 PCNs were in deliberations for 10 months, and he had objected, requesting further review. GARDNER stated CNS believed they had to respond to PRC 88-11 and FOUST's memorandum said the only way to use the PCNs. GARDNER said, at the 1991 SORC meeting, he argued against the PCNs, but he did sign them as a technical reviewer (Exhibit 44, pp. 60 and 61).
272. GARDNER said he did go through an outage where the RPV was disassembled with no problems. GARDNER also said during the years since 1991, as he moved up to positions of increasing responsibility, he did not change these requirements as there were other priorities (Exhibit 44, p. 61).
273. GARDNER said he probably talked to MEACHAM and HORN after getting a clarification from GE on PRC 88-11 (Exhibit 17). GARDNER stated that HORN and MEACHAM were both at one of the SORC meetings on March 9, 1993, that discussed these PCNs. GARDNER said they did not attend the SORC meeting, but passed through while the issues were being discussed. GARDNER said HORN told the SORC meeting he thought a letter existed from GE that allowed disassembly without secondary containment. GARDNER said they told HORN the letter could not be found. GARDNER said HORN told them "if it was SORC's opinion that what has been here is adequately addressed, the concerns associated with this, he had no questions" (Exhibit 44, pp. 62 and 63).
274. GARDNER said there was a break in the SORC meeting, and the SORC did not feel they had sufficient justification for the changes, and they wanted

to see if there were additional items not considered. GARDNER could not recall if 7.4.4 was passed during the first session and 7.4.5 and 7.4.6 were passed during the second session (Exhibit 44, p. 62).

INVESTIGATOR'S NOTE: The minutes of the SORC meeting (Exhibit 18) reflect that 7.4.4 was approved in the first session and 7.4.5 and 7.4.6 were approved during the second session.

275. GARDNER stated he gave approval on March 10, 1993, as indicated by the shift coordinators meeting minutes (Exhibit 19), to move the moisture separator prior to secondary containment testing. GARDNER added that evidently CNS had approved the procedures on March 10, 1993, and they wanted clarification (Exhibit 44, p. 64).

INVESTIGATOR'S NOTE: GARDNER appeared to become confused and could not recall independently whether all three PCNs were approved the same date or two of them were approved a day or two later. GARDNER said he would have to look at the SORC meeting minutes and the PCNs to be sure. GARDNER said he would not have approved the separator removal if the SORC meeting approval was not already there (Exhibit 44, pp. 64, 65, and 66).

276. GARDNER said he did not recall talking to SWANSON about these 1993 PCNs or telling him to initiate these PCNs (Exhibit 44, pp. 66 and 67).
277. GARDNER stated he could not recall if he told FLAHERTY to initiate the PCNs or told him to see if there was sufficient justification to initiate them (Exhibit 44, p. 67).
278. GARDNER stated that he could not remember if he and MACE made the decision to initiate PCN changes, but GARDNER said he wanted an evaluation done. GARDNER said they were not going to proceed without some additional information from GE that said it was acceptable (Exhibit 44, p. 70).
279. GARDNER was asked why he needed the GE determination after he earlier stated he had already come to the conclusion by March 8, 1993, that secondary containment was not necessary. GARDNER stated that CNS wanted some additional information and again acknowledged that no deterministic analysis had been performed (Exhibit 44, p. 70).
280. MEACHAM stated he has been the senior nuclear division manager of Safety Assessment at CNS since September 15, 1993. MEACHAM said before that, he was the site manager from May 1992 and was the division manager of Nuclear Operations from early 1992. MEACHAM said he had been the senior manager of Operations from 1989/1990 until early 1992 (Exhibit 45, pp. 4 and 5).

281. MEACHAM said he was the SORC Chairman that approved PCNs 7.4.4, 7.4.5, and 7.4.6 in 1991 (Exhibits 6, 7, and 8). MEACHAM stated these three PCNs were based on PRC 88-11, and they added the requirement for secondary containment (Exhibit 45, pp. 6 and 7).
282. MEACHAM stated that FOUST's memorandum (Exhibit 5), in December 1988, was the NPPD evaluation of GE PRC 88-11 (Exhibit 4). MEACHAM said FOUST's recommendations are what led to the three 1991 PCNs (Exhibit 45, p. 8).
283. MEACHAM said the SORC meeting review of the three 1991 PCNs discussed what load could potentially damage fuel and determined that Engineering could not ascertain the load. MEACHAM said to respond to PRC 88-11, they took a very conservative approach and made the changes in the three 1991 PCNs (Exhibit 45, pp. 10 and 11).
284. MEACHAM acknowledged that Amendment 147 (Exhibit 10) added tech spec 3.7.C.d, which stated, "No irradiated fuel is being handled in secondary containment and no loads which can potentially damage irradiated fuel are being moved in the secondary containment" (Exhibit 45, pp. 12 and 13).
285. MEACHAM said PRC 88-11 was not the basis for part of this tech spec. MEACHAM stated the words to require secondary containment were added to Amendment 147. MEACHAM said the SRAB's chairman was interested in making sure unanalyzed loads would be precluded from being moved over the irradiated fuel unless there was secondary containment (Exhibit 45, p. 13).
- INVESTIGATOR'S NOTE: This is a different recollection from GARDNER of Amendment 147 where he said PRC 88-11 was the basis for part of this amendment.
286. MEACHAM stated there are loads that are analyzed to be lifted over irradiated fuels, and there are unanalyzed loads to be lifted over irradiated fuel. MEACHAM added that the separator, dryer, and RPV head are analyzed loads (Exhibit 45, p. 16).
287. MEACHAM was asked why did CNS do the 1991 PCNs if they were analyzed loads. MEACHAM stated that CNS was being ultra conservative because of a disagreement between their Maintenance Engineering and Engineering departments (Exhibit 45, p. 16).
288. MEACHAM said the FOUST memorandum stated the NPPD response to NUREG 0612 did not address the concern identified by PRC 88-11. MEACHAM said that he told him PRC 88-11 talked about unanalyzed loads and NUREG 0612 talked about analyzed loads (Exhibit 45, pp. 17 and 18).

289. MEACHAM admitted that he had no idea what FOUST meant by the statement NUREG 0612 did not address the concern identified by PRC 88-11 (Exhibit 45, p. 19).

INVESTIGATOR'S NOTE: The testimony from FLAHERTY, MACE, GARDNER, and MEACHAM reflects that FOUST and MOELLER were not contacted when the 1993 PCNs were revised to delete the secondary containment requirements. FOUST and MOELLER were primarily responsible for the bases and initiation of the 1991 PCNs.

290. MEACHAM said 3.7.C.d, the requirement for secondary containment, was added to Amendment 147 to clarify that unanalyzed loads could damage irradiated fuel and would require secondary containment (Exhibit 45, pp. 22 and 23).
291. MEACHAM said it was GE's conclusion, with PRC 88-11, that each utility should evaluate its plant specific configuration to determine the applicability of this event. MEACHAM said the only evidence he has that CNS did an evaluation was the FOUST memorandum which was the engineering response (Exhibit 45, pp. 26 and 27).
292. MEACHAM said he did not interpret FOUST's memorandum to mean that since CNS had not done an analysis, a conservative approach was recommended to cover all loads with secondary containment. MEACHAM said the reason they did the 1991 PCNs was because at the SORC meeting, Maintenance and Engineering could not agree on what constituted a load of significance, so they were conservative. MEACHAM said they decided to cover all loads (Exhibit 45, pp. 27 and 28).

INVESTIGATOR'S NOTE: MEACHAM denied FOUST recommended a conservative approach because there was no analysis. However, when asked why do the PCNs, MEACHAM responded they were being conservative because they did not have an analysis.

293. MEACHAM said he could not recall who from Engineering disagreed with the 1991 PCNs. MEACHAM acknowledged that FOUST's memorandum noted that revisions had been discussed with maintenance and operations supervisors, and they did not expect any significant inconvenience (Exhibit 45, p. 29).
294. MEACHAM stated he did agree with the 1991 PCNs or he would not have signed them as the SORC Chairman (Exhibit 45, pp. 29 and 30).
295. MEACHAM was asked what happened between 1991, when he supported those PCNs, and 1993 when they reversed the earlier PCNs. He stated there was no problem establishing secondary containment in 1991. MEACHAM said that when the secondary containment test failed in 1993, CNS was faced with a reduced inventory condition. MEACHAM added that such a situation

is one of the riskiest periods for a BWR. MEACHAM said you have just come off line with a very hot core and you have a reduced inventory [water] (Exhibit 45, pp. 31 and 32).

296. MEACHAM said CNS's motivation to do the revised PCNs in 1993 was to get the plant to a safer condition. MEACHAM said he attended the 1993 SORC meeting, in an oversight role, and the PRC 88-11, 1991 PCNs, and NUREG 0612 were all reviewed. MEACHAM said the SORC also reviewed a letter from the NRC which clarified the situation in the 1988 time frame (Exhibit 45, p. 33).
297. MEACHAM said he first learned CNS had not been able to obtain secondary containment on March 8, 1993, and he probably discussed it with HORN and GARDNER (Exhibit 45, pp. 36 and 37).
298. MEACHAM said he recalled he, HORN, and GARDNER discussed the need to get the inventory [water] up, and they asked if the secondary containment requirements of the procedures were required (Exhibit 45, p. 37).
299. MEACHAM said about 3 hours would have given people enough time to evaluate procedures and to make and approve revisions. MEACHAM stated he based this on his attendance at the SORC meeting where recent technical changes associated with the PCNs were discussed (Exhibit 45, p. 39).
300. MEACHAM said he was not familiar with the 1993 PCNs nor how much they are in error. MEACHAM said the PCNs were not tech spec changes and FLAHERTY had told him that he [FLAHERTY] had made a mistake in showing them as tech spec changes on the PCNs (Exhibit 45, p. 39).

INVESTIGATOR'S NOTE: MEACHAM was there for the SORC meeting discussion, but he did not see any errors on the PCNs. Like the other SORC meeting members, he did not note they were marked as tech spec changes and the justification for removing the secondary containment requirements were Amendments 147 and 150.

301. MEACHAM said he did not read Amendments 147 and 150 at the SORC meeting. MEACHAM said he was looking at the wording in the tech specs and recalling the discussions in the SRAB meeting when those words were added to the tech specs (Exhibit 45, p. 41).
302. MEACHAM said the SORC meeting discussion lasted about 2 1/2 hours on the 1993 PCNs, and he was there for the entire discussion. MEACHAM said he did not know if there were two SORC meetings that day to approve the PCNs (Exhibit 45, pp. 42 and 43).

INVESTIGATOR'S NOTE: MEACHAM said he was there for the entire discussion yet he did not know if there were two meetings. The SORC meeting minutes reflected two meetings. Further, GARDNER,



ESTES, and MACE said the discussion was about 1/2 hour. GARDNER, MACE, and ESTES were also unsure if there were one or two SORC meetings.

303. MEACHAM said that on March 8, 1993, there was confusion, and on March 9, 1993, after reviewing the documentation, he became confident that the approach being taken was satisfactory (Exhibit 45, p. 44).
304. MEACHAM, when asked if CNS had ever done an analysis to determine if the movement of the RPV head, dryer, and separator would not damage fuel if dropped. He stated that NUREG 0612 was utilized as their analysis, and it showed that dropping of those components to be an improbable event (Exhibit 45, pp. 44 and 45).
- INVESTIGATOR'S NOTE: MEACHAM did not answer the question if the components would damage the fuel, only that such a drop is an improbable event. Further, an improbable event does not remove the potential for an occurrence.
305. MEACHAM said they contacted GE and requested an analysis be performed about 2 months after this event. MEACHAM said CNS wanted to confirm what GE told them in 1988, that it was impossible for those components to reach the irradiated fuel even if they are dropped. MEACHAM said his cursory understanding of the GE analysis is that dropping those components could not damage irradiated fuel. MEACHAM said the analysis did not address the knocking loose of any part [component or RPV structure] if such a drop occurred (Exhibit 45, pp. 45 and 46).
306. MEACHAM said he did not recall GE ever telling CNS they did not need secondary containment for the movement of those loads [RPV head, dryer, and separator] (Exhibit 45, p. 46).
307. MEACHAM identified his handwriting on the internal GE memorandum (Exhibit 20). MEACHAM said he was not sure why he wrote on it because he was not on the distribution for the memorandum. MEACHAM stated he was trying to clarify the wording in the memorandum. MEACHAM said he could not remember GE telling him they would not change because it would be plant specific and GE had not performed an analysis (Exhibit 45, pp. 47 and 48).
308. MEACHAM stated he disagreed that PRC 88-11 required CNS to do an analysis. He also said he disagreed with GE, in April 1993, telling him an analysis was necessary. MEACHAM said the RPV disassembly component analysis had been performed generically in 1988. MEACHAM stated that since this became a concern he wanted a CNS specific analysis so CNS could prove to themselves that the components dropping and damaging irradiated fuel was an "incredible event" (Exhibit 45, p. 48).
309. MEACHAM said he does not recall whose decision it was to ask GE to document the GE telephone conversation of March 1993. MEACHAM said he

did not recall talking to anyone at GE about this issue. MEACHAM said GARDNER provided him the copy of the telecon record, and he [MEACHAM] attempted to clarify what he [MEACHAM] thought CNS asked GE to provide. MEACHAM said GARDNER went back to GE to see what GE could do about the memorandum (Exhibit 45, pp. 49 and 50).

310. MEACHAM was asked whose decision was it to ask GE for a better documented version of the March 9, 1993, conversation. He stated that the words in the question were a "little bit" inaccurate. MEACHAM said he thought he asked for the memorandum to verify the accuracy of verbal statements CNS had been given a couple of years before. MEACHAM said this issue was discussed back in the 1988 time frame, and GE had given CNS a generic document that talked about the incredible or impossibility of one of the components dropping and striking irradiated fuel (Exhibit 45, p. 52).
311. MEACHAM said CNS had searched but could not find the document he thought he had seen 3 years before. MEACHAM said that GE could not remember a generic calculation or find the people who had talked to him in 1988. MEACHAM said that GE told him they had performed that analysis for other plants, and they could do it for CNS (Exhibit 45, p. 52).
312. MEACHAM stated that FLAHERTY told the SORC meeting, in 1993, that PRC 88-11 was not intended to cover these components and that NUREG 0612 was the governing document for those analyzed loads. MEACHAM, when it was pointed out to him these two documents were also used to add the requirements in the 1991 PCNs, said the 1991 SORC meeting had not been "smart enough" when they added those changes. MEACHAM said this issue should have been clarified at the 1991 SORC meeting, but CNS did not do it at that time (Exhibit 45, p. 54).
313. MEACHAM stated the 1991 SORC meeting discussion said they did not think these secondary containment requirements were required. MEACHAM said they decided to be conservative, and they did not see any inconvenience by adding these procedures (Exhibit 45, p. 55).
314. MEACHAM said he did not have GE do the analysis because GE would not sign his amended memorandum because it required a plant specific analysis. MEACHAM could not recall anyone telling him GE refused to sign his amended memorandum because it was plant specific (Exhibit 45, p. 55).
315. MEACHAM said part of his motivation to have GE do the analysis in April 1993 was to have an analysis that no one could argue about (Exhibit 45, p. 56).
316. MEACHAM said he did not have the analysis done in 1988 because he had been given the information verbally that the components would not hit irradiated fuel if dropped. MEACHAM stated that possessing this information in 1991 and because he could not foresee any negative

associated with the changes, he approved the 1991 PCNs as SORC chairman. MEACHAM said though he had a document, he did not present it at the 1991 SORC meeting and tell FOUST he was wrong. MEACHAM said they did not get into that much of a discussion (Exhibit 45, p. 56).

317. MEACHAM said the 1993 SORC meeting had discussed "quite heavily" the probability of other loads hitting irradiated fuel. MEACHAM said he told the SORC of verbal statements GE made in the past indicating that this probability would be an "incredible event." MEACHAM said GE had performed that analysis for several plants with CNS's exact configuration. MEACHAM added GE just wanted to get an extra \$25,000 to change the name (Exhibit 45, p. 58).
318. MEACHAM admitted he did not get the GE analysis until after the decision was made because he did not need it to make the decision. MEACHAM said NUREG 0612 was the analysis that said the probability of these loads hitting the irradiated fuel would be "incredible" (Exhibit 45, p. 59).
319. MEACHAM said in thinking back, it would have been a prudent course of action to contact NRC [March 1993]. MEACHAM said CNS did business "a little bit differently then," and he did not think about calling the NRC (Exhibit 45, p. 60).
320. MEACHAM admitted that Amendment 147, which added secondary containment requirements, came 3 years after the LONG memorandum. MEACHAM said that the SRAB did not discuss the LONG memorandum when adding the secondary containment requirements. MEACHAM said the reason for adding the requirement was to preclude lifting unanalyzed loads, either over the RPV or the spent fuel pool, without having secondary containment intact (Exhibit 45, pp. 67 and 68).
321. MEACHAM said in the minds of the SRAB, the activities to be covered by secondary containment did not include RPV disassembly loads. MEACHAM said they were considered analyzed loads from the standpoint that dropping them would be an "incredible event" (Exhibit 45, p. 69).

INVESTIGATOR'S NOTE: This testimony does not reflect the events at that time. The Amendment 147 request to the NRC was dated the same day two of the 1991 PCNs were approved by MEACHAM requiring secondary containment. The request to the NRC asked the NRC to expedite their request as an outage was approaching, and they wanted these changes in place. The request contained a few changes, including making secondary containment a requirement when moving loads with the potential to damage irradiated fuel.

322. MEACHAM stated there was a misunderstanding between himself and GARDNER when he left the SORC meeting on March 9, 1993. MEACHAM said he believed only the RPV head and dryer would be moved without secondary containment. MEACHAM said on the following morning he discovered that

the separator had also been moved without secondary containment. MEACHAM said there was no problem by GARDNER taking this action, it was just a difference in communication (Exhibit 45, pp. 71 and 72).

323. HORN stated he has been the vice president of Nuclear for NPPD since August 1993 which was located at the CNS site. HORN said before that, he had been the nuclear power group manager since June 1990 which was located at the general office in Columbus, Nebraska. HORN added that his prior position was senior manager of Nuclear Operations since January 1986 which was located at CNS site (Exhibit 46, p. 3).

INVESTIGATOR'S NOTE: HORN admitted he had been interviewed by telephone on September 1, 1993, by Mr. Dan STENGER, Attorney, Winston & Strawn, and Mr. Robert GREEN, Attorney, NPPD. HORN reviewed a copy of the notes of that interview prepared by the attorneys. HORN stated he had reviewed them earlier this date and they reflect what occurred during that interview (Exhibit 46, pp. 6 and 7).

324. HORN stated the LONG memorandum (Exhibit 2) occurred before CNS's receipt of GE PRC 88-11. HORN said LONG's memorandum came as a result of conversations he [HORN] had with the NRC senior resident inspector (SRI). HORN said the SRI had a concern with the BASES, and the LONG memorandum provided an opinion on the need for secondary containment. HORN said the SRI's concern resulted in a tech spec change to clarify the BASES (Exhibit 46, pp. 7 and 8).
325. HORN reviewed Amendment 150 and stated it appeared to be the amendment that clarified the BASES (Exhibit 46, p. 8).
326. HORN stated he recognized Amendment 147 which added tech spec 3.7.C.d. HORN said this amendment added the requirement for secondary containment for loads that could potentially damage irradiated fuel. HORN stated CNS's proposal that led to Amendment 147 was dated July 18, 1991, and the date of the proposal leading to Amendment 150 was July 19, 1991 (Exhibit 46, pp. 9 and 10).
327. HORN said the third paragraph on page 3 of 7 of NPPD Proposal No. 68 (Exhibit 9) led to Amendment 147. HORN said they revised 3.7.C.1.d on page 66 of the tech specs, and this part of the amendment added the language "and no loads which could potentially damage the irradiated fuel are being moved in secondary containment" as a condition for determining whether secondary containment is required. HORN admitted it did not qualify the load as light, medium, or heavy, just as a load (Exhibit 46, p. 12).
328. HORN stated that these words were added to tech specs because CNS was continuing to address PRC 88-11. HORN said he did not remember if

PRC 88-11 specified what specific load could damage fuel. HORN said at the time, CNS was concerned about being able to quantify loads of approximately 750 to a 1000 pounds (Exhibit 46, p. 13).

INVESTIGATOR'S NOTE: Previous testimony indicated that the PCNs were approved on July 18, 1991, the same date Proposal No. 68 was sent to the NRC. The PCNs approved secondary containment on heavy loads because CNS and GE did not know what load weight would damage fuel. HORN is the first person to state that CNS knew in 1991 that PRC 88-11 was for light loads only.

329. HORN reviewed FOUST's memorandum (Exhibit 5) and did not recall the document. HORN, after some discussion, said he did not believe the analysis recommended in FOUST's memorandum was necessary. HORN said, based on his knowledge of plant design, an analyzed condition would be required if a load being dropped on the irradiated fuel was considered a probable event (Exhibit 46, pp. 13, 14, and 15).
330. HORN said, in 1988, he thought the design basis of CNS with NUREG 0612 and the CNS tech specs addressed all the issues, except for light loads. HORN said that PRC 88-11 addressed the light loads. HORN said there were many conversations indicating that the weight was not as important as the shape of the object (Exhibit 46, p. 17).
331. HORN, when asked if FOUST's memorandum discussed plant configuration, stated that it talked about the NPPD response to NUREG 0612 regarding Control of Heavy Loads. HORN said the NUREG and the NPPD response did not address the concern of PRC 88-11 (Exhibit 46, p. 18).
332. HORN said he was not familiar with the 1991 PCNs (Exhibits 6, 7, and 8). HORN said he was not part of the review process, and he did not recall reviewing these PCNs after they were approved (Exhibit 46, p. 20).
333. HORN said he first discussed the 1991 PCNs when MEACHAM telephoned him during the 1993 outage when secondary containment could not be established (Exhibit 46, p. 20).
334. HORN acknowledged that the NPPD proposals (Exhibits 9 and 11), which resulted in Amendments 147 and 150, were initiated within 1 day of the CNS approval of two of the 1991 PCNs (Exhibit 46, p. 23).
335. HORN said as a member of the SRAB he reviewed Amendment 147 and part of the purpose of the tech spec change was to address small loads (Exhibit 46, p. 24).
336. HORN stated he had nothing to do with the generation of Amendment 147, only the review. HORN said only PRC 88-11 regarding light loads applied to Amendment 147. HORN said FOUST was working on the issue when he [HORN] was at CNS. HORN said he was also involved in the review of this subject with LONG in 1988 (Exhibit 46, p. 25).

337. HORN was confronted by prior testimony that because no analysis of the loads had been performed, a conservative approach was taken by CNS to cover all load movement with secondary containment. HORN disagreed and said since CNS did not know what weight load could damage fuel, CNS ensured movement of all light loads were to have secondary containment (Exhibit 46, p. 26).
338. HORN was informed CNS personnel said all loads, while he was the only one that thought PRC 88-11 addressed only light loads. HORN said this was discussed with Engineering before he left the site. HORN said they were trying to ascertain the size and shape of a light load because they were discussing small objects moving over the fuel. HORN said the result of their discussion was not finalized when he left CNS, but they were discussing the need to analyze light loads (Exhibit 46, p. 28).
339. HORN said he was surprised to learn the separator had been moved without secondary containment because of an agreement he had reached with the resident inspector at CNS in 1988. HORN said he had agreed to leave the separator in place until they got the matter resolved and they later pursued it through LONG (Exhibit 46, p. 30).
340. HORN stated that the LONG memorandum basically concurred (Exhibit 2) with CNS interpretation of CNS tech specs that secondary containment was not needed until the actual movement of fuel (Exhibit 46, p. 31).
341. HORN acknowledged that the LONG memorandum came before PRC 88-11, the evaluations, and the 1991 PCNs (Exhibit 46, p. 31).
342. HORN, when asked if PRC 88-11 recommended a plant specific analysis, stated that his memory of that PRC and discussions he had with GE during 1988, dealt only with light loads, not heavy loads (Exhibit 46, p. 32).
343. HORN was shown the April 13, 1993, GE internal memorandum (Exhibit 20) and stated he reviewed the document at that time. HORN also stated he saw the suggested changes to that memorandum which were in MEACHAM's handwriting. HORN stated that no one told him that GE refused to incorporate all of MEACHAM's suggested revisions in the memorandum because it would make it a plant specific response, and GE had not done an analysis (Exhibit 46, pp. 33 and 34).
344. HORN stated an analysis was ordered from GE a few days after the April 13, 1993, memorandum because it was apparent the NRC had some concerns with the methodology that was followed during the 1993 refueling outage (Exhibit 46, p. 35).
345. HORN, when asked why spend the money on an analysis for a position that he felt secure with responded, "I guess primarily to satisfy the NRC" (Exhibit 46, p. 35).

346. HORN said he was not concerned that the April 13, 1993, GE internal memorandum did not mention the separator. This was the same memorandum that HORN and others had reviewed and made suggested changes to. HORN admitted he had been surprised the separator had been removed without secondary containment (Exhibit 46, p. 36).
347. HORN acknowledged PCN 7.4.6 was approved on March 9, 1993, which no longer required secondary containment when removing the separator. HORN reviewed the minutes of the Shift Coordinators Meeting for 1830 hours [6:30 p.m.], March 10, 1993. HORN, when asked why GARDNER had to give his approval to remove the separator without secondary containment, responded he assumed they did not have a copy of the changed procedure (Exhibit 46, pp. 37 and 38).
- INVESTIGATOR'S NOTE: HORN was asked why just the separator and not ask for permission to move the head and dryer since they were all approved together the day before. HORN said he could not answer that question. HORN was told that MEACHAM was also surprised that the separator had been moved without secondary containment, as well as the people who asked GARDNER's approval. HORN was also told that GE had not included it in a memorandum that had been reviewed and edited by CNS staff.
348. HORN reviewed the 1993 PCNs and stated he had not seen them before. HORN said he had not been a part of the SORC meeting which approved the PCNs and had not attended the SORC meeting (Exhibit 46, pp. 39 and 40).
349. HORN said he recalled a discussion with MEACHAM wherein he thought they had verified the requirements for movement of the internals with GE and had a letter to that effect. HORN stated this conversation took place when MEACHAM had telephoned that CNS was restrained from not being able to flood up the RPV (Exhibit 46, pp. 40 and 41).
350. HORN said they received this GE letter in 1988, and it should have been in CNS files. HORN could not recall if he provided a copy of that letter to FOUST when he [FOUST] was doing his evaluation (Exhibit 46, p. 41).
351. HORN was asked why didn't he or MEACHAM, the SORC chairman on the 1991 PCNs, provide a copy of this letter to FOUST. HORN responded that he had not seen FOUST's memorandum regarding his [FOUST] evaluation. HORN corrected himself and stated he did not remember seeing FOUST's memorandum. HORN added that he reads many memorandums over a year's time (Exhibit 46, p. 43).
352. HORN reviewed the 1993 PCNs (Exhibits 14, 15, and 16) and stated item 5 indicates these PCNs involved a change to tech specs. HORN stated that these PCNs were not tech spec changes and does not know why they were marked as changes (Exhibit 46, p. 44).

353. HORN said he did not believe secondary containment was necessary during RPV disassembly because of the plant design, the requirements of NUREG 0612, and the upgrades of the crane. HORN added that the way it was addressed under the design basis was to make the risk so small it was of no consequence (Exhibit 46, pp. 44 and 45).
354. HORN acknowledged that the written justification for the 1993 PCNs did not state that these loads do not have the potential to damage the fuel (Exhibit 46, p. 45).
355. HORN said NUREG 0612 addresses the requirements for crane design for movement of the upper internals, and it minimizes the potential to drop a load (Exhibit 46, pp. 45 and 46).
356. HORN acknowledged that Amendment 150 did not remove any requirement, but brought the BASES into agreement with the LCO. HORN also admitted that Amendment 147 added the requirement for secondary containment. HORN, when asked if the justification on the 1993 PCNs was in error because it stated these two amendments removed secondary containment requirements, stated that FLAHERTY should have been clearer in his description (Exhibit 46, pp. 46 - 49).

INVESTIGATOR'S NOTE: HORN did not answer the question of whether FLAHERTY was in error in the written justification of the PCNs.

357. HORN acknowledged again that he did not attend the SORC meeting. HORN said he did not tell the SORC meeting that if they were happy with the way things were, then he would go along with the changes (Exhibit 46, p. 51).
358. HORN, in commenting on his interview with the attorneys, said the attorney memorandum says "head," but they had been talking RPV internals in the 1988 letter (Exhibit 46, p. 57).
359. HORN, when asked how NUREG 0612 removes the potential for doing damage, stated primarily by reducing the risk to a point where it is of little significance. HORN later stated that NUREG 0612 lowers the risk to the point where it is acceptable, not only to CNS, but he assumed to the NRR staff (Exhibit 46, pp. 57 and 60).
360. HORN stated the NRC should have been contacted in March 1993 regarding this issue. HORN said their practice in the past has been to communicate with the SRI, and he [HORN] assumed the SRI knew from site activities or from other discussions. HORN said he could only assume that the CNS staff thought the NRC was apprised of the activities. HORN added it was "typically not our practice to try to hide anything that is going on" (Exhibit 46, pp. 61, 62, and 63).
361. HORN stated he never gave MEACHAM any directions, they both agreed to pursue the secondary containment issue. HORN said he told MEACHAM he



thought this issue had been resolved earlier and wanted to know why it came up again. HORN said they also discussed why they were in a high risk situation by not being able to move forward and flood up the RPV. HORN said this conversation took place on March 8, 1993 (Exhibit 46, pp. 64, 65, and 66).

362. HORN said he recalled both a conversation with CNS configuration management people about NUREG requirements or bases and the conversation with MEACHAM (Exhibit 46, p. 67).

INVESTIGATOR'S NOTE: HORN earlier testified about seeing the April 13, 1993, internal GE memorandum, including the copy with MEACHAM's notes written on it. This would indicate further knowledge and involvement with CNS on this issue.

363. HORN stated FLAHERTY has been reassigned to a new position because he was not doing well with his management skills. HORN said FLAHERTY's technical skills were fine, and FLAHERTY was not removed from his position because of the 1993 PCNs (Exhibit 46, p. 71).
364. HORN stated that he did remember talking about light loads in 1988 when PRC 88-11 was issued. HORN said it may have been 1989, but these discussions were with BALLINGER and "maybe even some with FOUST." HORN reiterated he did not recall FOUST's memorandum, its recommendations to change the 7.4xx procedures that deal with heavy loads, or the 1991 PCNs (Exhibit 46, pp. 72 and 73).

INVESTIGATOR'S NOTE: HORN's testimony that PRC 88-11 was light loads is contrary to testimony from FOUST and BALLINGER. HORN also stated he had a letter at the time [1991] from GE giving approval to move internals without secondary containment. This would not explain how PRC 88-11 led to adding secondary containment requirements to the 1991 PCNs dealing with heavy loads and Amendment 147.

365. BLACK stated he has been the GE site representative at CNS for the past 3 years (Exhibit 47, p. 1).
366. BLACK said he had several conversations with FLAHERTY regarding the NRC investigation concerning RPV disassembly and secondary containment. BLACK said they had no idea what the problem was because everything was "above board" (Exhibit 47, p. 1).
367. BLACK stated that CNS told him about CNS procedure changes in 1992 which required secondary containment during RPV disassembly that were based on PRC 88-11. BLACK said CNS told him PRC 88-11 was confusing and asked for a correct interpretation (Exhibit 47, p. 1).

368. BLACK said he had various discussions with GARDNER and if GARDNER did not ask for the interpretation, it would have been FLAHERTY, BALLINGER, or FOUST (Exhibit 47, p. 1).
369. BLACK said he contacted SCHOCK and KLAPPROTH of the GE San Jose, California, office. BLACK said he was told PRC 88-11 addressed loads not covered by NUREG 0612 and if CNS met the requirements of NUREG 0612, GE did not have a concern with RPV disassembly without secondary containment. BLACK said he was told PRC 88-11 was concerned with loads that weigh the same as a fuel bundle (Exhibit 47, pp. 1 and 2).
370. BLACK wrote a telecon record (Exhibit 17) regarding this conversation and gave a copy to GARDNER. BLACK stated the notation "no concern" in the telecon record inferred secondary containment was not required (Exhibit 47, p. 2).
371. BLACK stated the April 13, 1993, internal GE memorandum (Exhibit 20) was a verification of the conversation he had earlier with SCHOCK and KLAPPROTH. BLACK said CNS requested this memorandum because of some questions from the NRC (Exhibit 47, p. 2).
372. BLACK thought the handwriting on the GE memorandum belonged to either BALLINGER or GARDNER. BLACK said he discussed the comments with GARDNER. BLACK said SCHOCK would not sign the memorandum as proposed by CNS as it would make it site specific, and GE had not done a site specific analysis (Exhibit 47, p. 2).
373. BLACK said he believed GARDNER was satisfied with the final SCHOCK memorandum and that it was probably MEACHAM that requested GE to do a site specific analysis (Exhibit 47, p. 2).
374. BLACK said he was not involved in the CNS 1991 PCNs that added the secondary containment requirements. BLACK said "in a sense" GE told CNS that it was okay to do RPV disassembly without secondary containment, as long as CNS met NUREG 0612. BLACK said PRC 88-11 did not prohibit RPV disassembly without secondary containment (Exhibit 47, p. 3).
375. BLACK said he was not familiar with NUREG 0612 and did not know if it addressed secondary containment. BLACK said he knew it addressed the movement of heavy loads (Exhibit 47, p. 3).
376. ERBES has been the GE nuclear services manager since December 31, 1990, in Omaha, Nebraska (Exhibit 48, p. 1).
377. ERBES said he was first contacted in mid-April 1993 by BLACK who said CNS wanted to discuss the interpretation of PRC 88-11. ERBES said they got SCHOCK and KLAPPROTH on the telephone to discuss the issue. According to ERBES, BLACK said he told them the movement of loads was surfacing again and he needed help. ERBES said KLAPPROTH stated CNS had been conservative in their interpretation of PRC 88-11 (Exhibit 48, p. 1).

378. ERBES said a short time after this phone conversation, he received a telephone request from BLACK that CNS wanted GE to do an analysis (Exhibit 48, p. 1).
379. ERBES stated he said he prepared a written proposal to CNS to do an analysis of the movement of the head, separator, and dryer. ERBES said CNS accepted the proposal. ERBES said the analysis was done, and it reflected the loads, if dropped, would not hit and damage the fuel. ERBES stated that neither the written proposal, the contract, the analysis, nor any of the conversations addressed secondary containment requirements (Exhibit 48, pp. 1 and 2).
380. SCHOCK stated she has been employed by GE for 23 years and as a licensing specialist since 1980 (Exhibit 49, p. 1).
381. SCHOCK stated she handled PRC 88-11 for GE, adding this was a 10 CFR Part 21 issue that was not reportable by GE as they could not evaluate the condition. SCHOCK said PRC 88-11 was sent to all of the BWRs and told them to evaluate this condition (Exhibit 49, p. 1).
382. SCHOCK said each utility was to look at their equipment, load, and critical path. SCHOCK said GE wanted the utilities to look at loads of less than 1100 pounds. SCHOCK said that weight [1100 pounds] is usually considered a heavy load and is covered by NUREG 0612 (Exhibit 49, p. 1).
383. SCHOCK said the BWRs may not have had any procedure in place or tech specs to control movement of light loads over the spent fuel, including establishing secondary containment (Exhibit 49, p. 1).
384. SCHOCK said BLACK telephoned her on March 8, 1993, and told her CNS had put in procedures a prohibition against moving any load without first establishing secondary containment. SCHOCK said BLACK told her that CNS wondered if they would comply with PRC 88-11 if they moved the RPV head, dryer, and separator without establishing secondary containment (Exhibit 49, pp. 1 and 2).
385. SCHOCK stated she told them [CNS] that PRC 88-11 addressed light loads. SCHOCK said she added that as long as they were in compliance with NUREG 0612, they should not have a problem with secondary containment (Exhibit 49, p. 2).
386. SCHOCK stated that NUREG 0612 had certain criteria for moving heavy loads. SCHOCK said you must show you will not damage fuel and there would not be a release if a load is dropped. SCHOCK said the objective is twofold -- first, the probability for a load drop is extremely small based on the load weight, equipment, and the critical path; and secondly, if you drop the load, it will not cause a release into the atmosphere. SCHOCK said the utility must conduct this evaluation to determine if the two objectives are met (Exhibit 49, p. 2).

387. SCHOCK said she had another telephone call with BLACK on March 9, 1993, and KLAPPROTH was also on this call. SCHOCK stated the same information was shared with BLACK as on the March 8, 1993, telephone call (Exhibit 49, p. 2).
388. SCHOCK said there was another telephone conversation on April 13, 1993, supported by a memorandum she wrote to ERBES (Exhibit 20). SCHOCK said the memorandum advised that PRC 88-11 addressed light loads and NUREG 0612 addressed heavy loads. SCHOCK added that the RPV head, dryer, and separator are heavy loads (Exhibit 49, p. 2).
389. SCHOCK said CNS sent back a "marked up" copy of her memorandum with suggested changes. SCHOCK said she told CNS she could not sign that memorandum because she had not done an "evolution" of the head, dryer, and separator over the spent fuel. SCHOCK said this "evolution or evaluation" is required by NUREG 0612, and GE had not done this "evaluation." SCHOCK said she believes this is what led to CNS requesting GE do such an analysis which was completed in May 1993 (Exhibit 49, p. 2).
390. SCHOCK said she did rewrite her April 13, 1993, memorandum for two reasons: the second memorandum read better, and CNS asked her to include reference to the dryer and separator (Exhibit 50, p. 1).

INVESTIGATOR'S NOTE: The revised memorandum does not make reference to the separator.

391. SCHOCK said the revised memorandum does not include the suggested CNS comments. SCHOCK said GE had not done an analysis to determine if such a load drop would damage the fuel. SCHOCK said she told BLACK she would not sign the memorandum as proposed by CNS because there was not an analysis (Exhibit 50, p. 1).
392. SCHOCK said BLACK never commented on whether CNS had an analysis. SCHOCK said she assumed CNS had not done the analysis or they would not have asked her to add the comments to her memorandum (Exhibit 50, p. 1).
393. SCHOCK said the second reason she would not add the CNS comments was that the April 13, 1993, memorandum was to document her conversation of March 9, 1993. SCHOCK said the CNS comments were not discussed during the March 9, 1993, conversation (Exhibit 50, p. 1).

INVESTIGATOR'S NOTE: MEACHAM (Evidence Item 309) said the GE, April 13, 1993, memorandum was to verify the accuracy of statements GE made to CNS a couple of years earlier. Specifically, that GE had told CNS it was okay to perform RPV disassembly without establishing secondary containment. SCHOCK (Evidence Item 391) said the purpose was to verify the March 13, 1993, conversation. Further, SCHOCK would not sign the memorandum as proposed by MEACHAM because GE had not done an analysis at CNS

394. KLAPPROTH said he has been employed by GE since 1974 and as the fuel licensing manager since April 1992 (Exhibit 51, p. 1).
395. KLAPPROTH reviewed a copy of a GE memorandum dated October 17, 1988 (Exhibit 4) and stated this was a notification to BWRs of PRC 88-11. KLAPPROTH said this notification informed the utilities that it was necessary for them to assess their facility to determine if there was a problem with moving loads over irradiated fuel (Exhibit 51, p. 1).
396. KLAPPROTH stated GE Engineer, Will MYERS, found a deficiency in a tech spec about secondary containment and this ultimately resulted in PRC 88-11. KLAPPROTH provided copies of GE memoranda leading up to PRC 88-11. KLAPPROTH stated the original concern only discussed the deficiency during cold shutdown [Mode 4] and the movement of loads less than 1100 pounds over the spent fuel pool. KLAPPROTH stated that BWR tech specs prohibit the movement of loads more than 1100 pounds over the fuel (Exhibit 51, p. 1).
397. KLAPPROTH said there were further changes until the final memorandum that went to the utilities included RPV disassembly [Mode 5]. KLAPPROTH stated he reviewed the final memorandum before it was issued, and it was correct to include Mode 5 (Exhibit 51, p. 2).
398. KLAPPROTH said NUREG 0612 is concerned with the movement of heavy loads over irradiated fuel. KLAPPROTH said it was his interpretation that NUREG 0612 is applicable only during RPV disassembly because tech specs cover all other modes (Exhibit 51, p. 2).
399. KLAPPROTH said a few of the utilities requested GE to do the drop analysis for their plant. KLAPPROTH said CNS had not made the request for the analysis until April 1993 (Exhibit 51, p. 2).
400. KLAPPROTH stated that in a telephone call with SCHOCK and BLACK on March 9, 1993, BLACK told him CNS was looking for help. KLAPPROTH said BLACK told him CNS was in refueling and their tech specs, while in the secondary containment area, were restrictive. KLAPPROTH said he told BLACK that NUREG 0612 addressed the movement of heavy loads (Exhibit 51, p. 2).
401. KLAPPROTH said he directed BLACK to ask CNS if they had done a drop analysis of the RPV head, dryer, and separator, or made any effort to meet the requirements of NUREG 0612. KLAPPROTH said BLACK telephoned him about 2 weeks later and told him CNS had not done an analysis, but CNS believed they had adequate controls in their tech specs. KLAPPROTH said he told BLACK that if CNS wanted some "relief" from their tech specs, they would have to do an analysis (Exhibit 51, pp. 2 and 3).
402. KLAPPROTH reviewed the April 13, 1993, memorandum and stated he had become familiar with it after the fact. KLAPPROTH said he agreed with the memorandum that NUREG 0612 has nothing to do with the spent fuel

- pool. KLAPPROTH said if NUREG 0612 requirements are met, there is no need to have secondary containment during RPV disassembly (Exhibit 51, p. 3).
403. HERRERA has been employed by GE since 1977 and as a principal engineer for the last 12 years (Exhibit 52, p. 1).
  404. HERRERA stated GE did an analysis for CNS to determine if the drop of the RPV head, dryer, or separator would damage the fuel at CNS. HERRERA stated CNS made this request on approximately April 13, 1993, and the results of this analysis was sent to CNS via a letter (Exhibit 23) dated April 30, 1993. HERRERA said the actual report followed about a week later (Exhibit 52, p. 1).
  405. HERRERA stated the analysis reflected that the configuration of the RPV structure would not allow the load to hit the fuel and the structure would not give, thereby protecting the fuel. HERRERA stated that secondary containment was not addressed or mentioned in this report (Exhibit 52, p. 1).
  406. HERRERA stated this analysis did not address parts of the load or parts of the structure breaking off and hitting the fuel and thereby damaging the fuel (Exhibit 52, p. 1).
  407. HERRERA said that this analysis would satisfy part of NUREG 0612. HERRERA said a further analysis would be necessary to determine whether parts could break off and hit and damage the fuel to satisfy NUREG 0612 (Exhibit 52, pp. 1 and 2).
  408. BALLAS said he has been employed as a program engineer by GE since April 19, 1993. BALLAS said this is the same date he was given the assignment to do an evaluation of the CNS RPV head, dryer, and separator assembly drop (Exhibit 53, p. 1).
  409. BALLAS said his analysis showed a drop of these loads would not damage fuel. BALLAS said the structure would not give, and the load would not hit and damage the fuel (Exhibit 53, p. 1).
  410. BALLAS acknowledged that his analysis did not consider parts of the load or structure breaking off and hitting and damaging the fuel. BALLAS said another analysis would have to be done to determine if parts could break off and hit and damage the fuel (Exhibit 53, pp. 1 and 2).

#### Investigator's Analysis

There was conflicting testimony as to who decided to initiate the 1993 PCNs, which deleted the secondary containment requirement.

This testimony is crucial to two points. First, it addresses the person(s) responsible for violating CNS tech spec 3.7.C.1.d, which prohibits the

movement of any load over irradiated fuel that if dropped could damage the fuel. The evidence reflects CNS did not do an analysis to determine if the dropping of the RPV head, dryer, and separator would damage the fuel. CNS had GE do an analysis over a month after CNS changed procedures allowing movement of these loads without secondary containment. Additionally, NRC as part of an inspection, questioned the 1993 PCNs and the possibility of a tech spec violation. The second point is the decision making process, which addresses the knowledge and intent of the responsible person(s). The following summary of testimony directly addresses these two points.

FLAHERTY, the initiator and author of the 1993 PCNs, stated the decision to remove the secondary containment requirement came as a result of a meeting between MEACHAM, HORN, and GARDNER (Evidence Item 61).

SWANSON, who provided technical assistance to FLAHERTY, including typing part of the PCNs, supported FLAHERTY's assertion. SWANSON said GARDNER approached him [SWANSON] about noon on March 8, 1993, and told him CNS wanted to make changes. GARDNER further told SWANSON that FLAHERTY would tell him what changes to make (Evidence Item 87). SWANSON said GARDNER and FLAHERTY both told him that NUREG 0612 was the basis for this decision and that PRC 88-11 was no longer applicable (Evidence Item 90). SWANSON said he did not come to an independent conclusion that secondary containment was not necessary. SWANSON said he did the PCNs because FLAHERTY instructed him to remove the secondary containment requirement (Evidence Item 91). SWANSON said he knew FLAHERTY was wrong in the written justification, and he (SWANSON) should have been more forceful in his objections to FLAHERTY (Evidence Item 94).

BALLINGER further supports the statements of FLAHERTY and SWANSON. BALLINGER, who worked directly for FLAHERTY, assisted with the 1993 PCNs. BALLINGER initially stated that he did significant research in arriving at the basis for the 1993 PCNs (Evidence Item 104). After reviewing the 1993 PCNs during his interview by OIRIV and after noting the numerous errors in the PCNs, BALLINGER admitted he had not researched NUREG 0612 and PRC 88-11. BALLINGER said he was so rushed by FLAHERTY that for this reason only, he did a quick review and returned the documents to FLAHERTY (Evidence Item 112). BALLINGER added that if it was his decision, he would throw out the 1993 PCNs until an analysis of the load was completed (Evidence Item 115).

MACE was interviewed on two occasions and when told the outage had been stopped because secondary containment was not operable, responded that it should not have been a problem (Evidence Item 184). MACE, after determining what procedures required secondary containment, said the 1991 PCNs were put in by "oversight or overzealousness" (Evidence Item 185). MACE, in both interviews, stated this belief was based on cognitive knowledge/common sense.

MACE said he talked to GARDNER about this problem, and GARDNER did not disagree with him. MACE said he initiated the PCN request (Evidence Item 186) and on March 9, 1993, he told them to change the procedures and delete the secondary containment requirement (Evidence Item 189). MACE, at the second interview and under oath, stated that he and GARDNER decided the procedure

requiring secondary containment was not correct, and GARDNER took it upon himself to change the procedures (Evidence Item 209). MACE, on two other occasions, stated that he and GARDNER decided to change the procedures (Evidence Items 210 and 230).

GARDNER denied that he and MACE decided to change the PCNs and said that the decision was made by Engineering (Evidence Item 251). GARDNER could not recall if he directed the TPCN to allow detensioning of the RPV head without secondary containment. GARDNER said he did sign the TPCN as a reviewer on March 8, 1993, though he had 30 days to sign as the reviewer (Evidence Item 252). On two occasions, GARDNER said he could not recall if he told MACE that secondary containment was not necessary. GARDNER added that he "probably" told MACE they needed to review the situation and see what could be done (Evidence Items 254 and 278). GARDNER said he discussed this situation with HORN and MEACHAM on March 8, 1993. GARDNER said they told him there was a letter from GE which stipulated it was acceptable to move the RPV head without secondary containment. GARDNER said they also provided a memorandum that LONG had written about refueling (Evidence Item 255). GARDNER said GE told either him or the SORC meeting that they would not sign the amended April 13, 1993, memorandum as proposed by CNS as it was plant specific (Item 258).

GARDNER said he talked to MEACHAM and HORN after receiving GE clarification on PRC 88-11 (the clarification was provided on March 9, 1993). GARDNER said that MEACHAM and HORN were both present at one of the SORC meetings, as observers, when the secondary containment issue was discussed. GARDNER stated that HORN told the SORC meeting "if it was SORC's opinion that what has been here is adequately addressed, the concerns associated with this, he had no questions" (Evidence Item 273). GARDNER said he did not recall talking to SWANSON, or telling him to initiate the 1993 PCNs (Evidence Item 276). GARDNER said he could not recall if he told FLAHERTY to initiate the PCNs, or if he told FLAHERTY to see if there was sufficient justification to initiate the PCNs (Evidence Item 277). GARDNER did not recall the events in the decision making process as described by SWANSON, FLAHERTY, and MACE.

MEACHAM admitted he attended the March 9, 1993, SORC meeting in an oversight role and discussed documents provided at the SORC meeting (Evidence Item 296). MEACHAM said he first learned CNS had been unable to obtain secondary containment on March 8, 1993, and he discussed it with GARDNER and HORN (Evidence Item 297). MEACHAM said he recalled this discussion was about the need to get the inventory [water] up and if the requirements of the procedures were really necessary (Evidence Item 298). This statement partially agrees with FLAHERTY's statement that there was a meeting between GARDNER, HORN, and MEACHAM on this issue, and the results were to change the procedures.

MEACHAM acknowledged that he wrote the proposed amendment to the GE, April 13, 1993, memorandum (Evidence Item 307). MEACHAM said he did not recall whose decision it was to ask GE to document the GE telephone conversation of March 1993. MEACHAM said GARDNER provided him with a copy of the GE telecon record. MEACHAM said he attempted to clarify what he thought CNS asked GE to



provide at that time (Evidence Item 309). This clarification was the amended April 13, 1993, GE memorandum, which GE refused to sign as suggested by MEACHAM because no analysis had been performed at CNS.

MEACHAM later stated that at the March 9, 1993, SORC meeting, there was intense discussion on whether the three loads could hit irradiated fuel. MEACHAM said GE had performed the analysis for several plants with CNS's exact configuration, and GE just wanted an extra \$25,000 (Evidence Item 317). MEACHAM stated he did not think such an analysis was necessary; however, after NRC began questioning these actions during their inspection, CNS ordered the analysis from GE.

MEACHAM said there was a misunderstanding between him and GARDNER when he [MEACHAM] left the March 9, 1993, SORC meeting. MEACHAM said it was his understanding that only the head and dryer would be moved without secondary containment. MEACHAM said he found the following day that the separator had also been moved without secondary containment (Evidence Item 322). MEACHAM stated he thought he had an agreement with GARDNER on what procedure to change; however, GARDNER did something different. The fact that the two of them had an understanding does not indicate an open discussion and agreement by all of the SORC meeting members. It does indicate they decided to take the action. The minutes of the SORC meeting reflect there were two meetings. The first approved the RPV head removal without secondary containment, and the second meeting approved the dryer and separator removal without secondary containment. Further, most of the SORC meeting members did not recall two meetings to approve the three PCNs.

HORN said MEACHAM telephoned him during the 1993 outage when secondary containment could not be established (Evidence Item 333). HORN said he was surprised to learn the separator had been moved without secondary containment because of an agreement he had reached with the NRC resident inspector in 1988. HORN said this agreement was made until the LONG memorandum resolved the issue (Evidence Item 339). The LONG memorandum was in early 1988, before PRC 88-11, the 1991 PCNs, Amendments 147 and 150, and almost 6 years before the 1993 PCNs. It is more believable that HORN's surprise was the same as MEACHAM's. HORN and MEACHAM had an understanding with GARDNER of which procedures would be changed, and it did not include the separator. This provides evidence of HORN's participation in, or at least prior knowledge of, the change in procedures.

HORN acknowledged that he reviewed the April 13, 1993, GE memorandum and the suggested changes written by MEACHAM. HORN added that no one told him that GE refused to sign the suggested revision as GE had not done an analysis (Evidence Item 343). HORN said the analysis ordered from GE, a few days after the April 13, 1993, memorandum, was done "primarily to satisfy the NRC" (Evidence Item 345). NRC, during their inspection in April 1993, asked many questions about the PCNs and a possible violation of tech specs. GE refused to sign the suggested revision of the April 13, 1993, memorandum because they had not done an analysis. CNS then decided it was necessary to get an analysis to support their position. However, this analysis is over a month

after CNS made their decision and moved their upper internals without secondary containment.

HORN, in disagreement with GARDNER's testimony, stated he had not attended the March 9, 1993, SORC meeting (Evidence Item 348). HORN said he did recall a conversation where he told MEACHAM there was a letter from GE that verified the movement of the internals without secondary containment (Evidence Item 349). HORN said he did not provide MEACHAM directions, but they both agreed to pursue the reasons CNS was back in this area, and the secondary containment issue had come up (Evidence Item 361).

### Conclusions

Based on the testimony and documentary evidence, it is concluded that CNS senior management, and specifically MACL GARDNER, MEACHAM, and HORN, through careless disregard, caused CNS to violate Tech spec requirements regarding the establishment of secondary containment prior to the removal of the RPV head and internals.

LIST OF EXHIBITS

<u>Exhibit No.</u>	<u>Description</u>
1	Notification of Investigation, dated June 17, 1993.
2	William LONG Memorandum, dated March 28, 1988.
3	NRC Inspection Report 50-298/88-07, dated May 11, 1988.
4	GE Notification PRC 88-11, dated October 17, 1988.
5	NPPD Response to GE PRC 88-11, dated December 7, 1988.
6	CNS PCN 7.4.4, Revision 19, dated July 18, 1991.
7	CNS PCN 7.4.5, Revision 17, dated July 18, 1991.
8	CNS PCN 7.4.6, Revision 18, dated October 3, 1991.
9	NPPD Proposed Change No. 68, dated July 18, 1991.
10	NRC Amendment No. 147 to CNS, dated October 10, 1991.
11	NPPD Proposed Change No. 95, dated July 19, 1991.
12	NRC Amendment No. 150 to CNS, dated November 22, 1991.
13	CNS TPCN 7.4.4, dated March 8, 1993.
14	CNS PCN 7.4.4, Revision 20, dated March 9, 1993.
15	CNS PCN 7.4.5, Revision 18, dated March 9, 1993.
16	CNS PCN 7.4.6, Revision 19, dated March 9, 1993.
17	GE Telephone Call Record, dated March 9, 1993.
18	CNS SORC Meeting Minutes of March 9, 1993.
19	CNS Shift Coordinators Meeting Minutes, dated March 8, 1993, through March 12, 1993.
20	GE April 13, 1993, Memorandum.
21	GE Proposal for RPV Head, Dryer and Separator Drop, dated April 20, 1993.

22 NPPD Authorization for GE Evaluation, dated April 21, 1993.  
23 GE Initial Letter of Report, dated May 3, 1993.  
24 GE Report of Assembly Drop, dated May 7, 1993.  
25 NPPD Investigation Report, dated February 7, 1993.  
26 NRC RIV Request for Technical Assistance.  
27 Report of Interview with WILCOX, dated September 2, 1993.  
28 Report of Interview with PRATO, dated May 28, 1993.  
29 Report of Interview with COE, dated May 26, 1993.  
30 Report of Interview with FOUST, dated August 9, 1993.  
31 Report of Interview with MOELLER, dated August 9, 1993.  
32 Report of Interview with BENNETT, dated June 3, 1993.  
33 Report of Interview with THOMPSON, dated August 10, 1993.  
34 Report of Interview with MADSEN, dated June 3, 1993.  
35 Report of Interview with BRATRSOVSKY, dated August 9, 1993.  
36 Report of Interview with FLAHERTY, dated June 2, 1993.  
37 Report of Interview with SWANSON, dated June 3, 1993.  
38 Report of Interview with BALLINGER, dated June 4, 1993.  
39 Report of Interview with YOUNG, dated June 3, 1993.  
40 Report of Interview with UNRUH, dated August 10, 1993.  
41 Report of Interview with ESTES, dated August 11, 1993.  
42 Report of Interview with MACE, dated August 10, 1993.  
43 Transcript of Interview with MACE, dated December 13, 1993.  
44 Transcript of Interview with GARDNER, dated December 14,  
1993.

- 45 Transcript of Interview with MEACHAM, dated December 14, 1993.
- 46 Testimony of HORN, dated February 7, 1994.
- 47 Report of Interview with BLACK, dated July 14, 1993.
- 48 Report of Interview with ERBES, dated July 14, 1993.
- 49 Report of Interview with SCHOCK, dated June 24, 1993.
- 50 Report of Interview with SCHOCK, dated September 18, 1993.
- 51 Report of Interview with KLAPPROTH, dated September 17, 1993.
- 52 Report of Interview with HERRERA, dated June 24, 1993.
- 53 Report of Interview with BALLAS, dated June 24, 1993.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

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Route:

- ① ~~Al Madson~~
- ② ~~John Thompson~~  
Return to H/G
- ③ File D915

AUG 31 1994

Sonalysts, Inc.  
Att: Mr. Leon Peterson, Manager of Contracts  
215 Parkway North  
Waterford, CT 06385

Dear Mr. Peterson:

Subject: NRC-26-92-267, Task Order No. 4, entitled "Technical Assistance to Support a Special Diagnostic Evaluation at Cooper Nuclear Station, Management and Organization"

In accordance with Section G.5 entitled, "Task Order Procedures" of the subject contract, this letter definitizes Task Order No. 4. The effort shall be performed in accordance with the enclosed Statement of Work.

Task Order No. 4 shall be in effect from August 29, 1994 through October 28, 1994, with a total cost ceiling of \$50,789. The amount of \$47,689 represents the total estimated reimbursable costs, and the amount of \$3,100 represents the fixed fee.

The obligated amount of this task order is \$46,838.

Accounting Data for Task Order No.4 is as follows:

APPN No.:	31X0200.824
B&R No.:	482-19-301-101
FIN No.:	E8215
OBLIGATED AMOUNT:	\$50,789.00
AEOD DOCUMENT ID:	AED92267004

The following individual is considered to be essential to the successful performance of work hereunder: Russ Brown.

The contractor agrees that such personnel shall not be removed from the effort under the task order without compliance with Contract Clause H.1, Key Personnel.

Issuance of this task order does not amend any terms or conditions of the subject contract.

H/6

9410030309 SP

Your contacts during the course of this task order are:

Technical Matters: Alan Madison  
Project Officer  
(301) 415-6412

Contractual Matters: Judith B. Corwin  
Contract Administrator  
(301) 415-6581

Please indicate your acceptance of this Task Order No. 4 by having an official, authorized to bind your organization, execute three copies of this document in the space provided and return two copies to the Contract Administrator. You should retain the third copy for your records.

If you have any questions regarding this matter, please contact Ms. Corwin, Contract Administrator, on (301) 415-6581.

Sincerely,




Mary Jo Mattia, Contracting Officer  
FIP Acquisition Branch  
Division of Contracts  
Office of Administration

Enclosure:  
As stated

ACCEPTED:

NAME:

  
LEON R. PETERSEN  
MANAGER OF CONTRACTS  
SONALYSTS, INC.

TITLE:

DATE:

8/6/04

TASK ORDER NO. 4, Revision 2

TECHNICAL ASSISTANCE TO SUPPORT A SPECIAL DIAGNOSTIC  
EVALUATION AT COOPER NUCLEAR STATION, MANAGEMENT AND ORGANIZATION

I. BACKGROUND/OBJECTIVES

Diagnostic Evaluations at nuclear power plants provide NRC senior management with an assessment of licensee safety performance which augments information provided by the Systematic Assessment of Licensee Performance (SALP) Program, the Performance Indicator (PI) Program and the various inspections performed by NRC Headquarters and Regional Offices. The assessment is independent in the sense that the administration and management of the program is independent of the licensing, inspection and enforcement process. Diagnostic evaluations are conducted with intensive team efforts beginning with a study of background information on plant design, procedures and organization, continuing with an onsite evaluation and concluding with a detailed report of the evaluation.

This task order is for the performance of a management and organization evaluation as a part of the Special Diagnostic Evaluation at Cooper Nuclear Station. The methods and techniques as described in the AEOD's Diagnostic Guidelines will be used to accomplish the evaluation. Cooper is located near Nebraska City, Nebraska and the corporate office is located in Brownville, Nebraska.

II. STATEMENT OF WORK AND DELIVERABLES

The evaluation shall be coordinated between an NRC Management and Organization team leader and the contractor's personnel.

In the evaluation of management and organization, the Contractor shall furnish one expert. This expert shall be required to accomplish the following tasks:

1. Prepare for the evaluation by a review of the overall Evaluation Plan (provided by NRC), and a review of licensee background and technical information. The Evaluation Plan will outline the areas to be evaluated. The expert shall establish a specific management and organization evaluation plan including preliminary findings, based upon the guidance in the overall Evaluation Plan.
2. The onsite evaluation shall concentrate on information gathering including an examination of the licensee's activities and performance in specific areas. The examination shall include interviews with key licensee personnel at all levels, programmatic reviews and assessments, and direct observations of operations.



Evaluation methodologies include a qualitative evaluation of licensee management controls, oversight and involvement, and organizational effectiveness which are relevant to plant safety performance. The evaluation shall also examine preliminary findings, perform special case study evaluation of specific issue areas, and establish and validate root-causes.

3. The Contractor shall prepare input to the final evaluation team report and submit it to the NRC management and organization evaluation team leader. The evaluation team report shall be in accordance with Attachment 7 of Section J of the basic contract. Additional information on the format, style, level of detail and quality expected will be made known to the Contractor during the preparation phase of the evaluation. All predecisional data shall be returned to the NRC Project Officer upon completion of the report.

### III. PERIOD OF PERFORMANCE - PLACE OF PERFORMANCE

The period of performance for this task is from August 29, 1994 to October 28, 1994. Work will be accomplished at the home offices of the Contractor, NRC offices in Rockville, Maryland, Cooper Nuclear Station, and corporate offices of Nebraska Public Power District in Brownville, Nebraska.

### IV. TECHNICAL CONTACT

Alan Madison, DEIIB/AEOD, (301) 415-6412.

### V. REPORTING REQUIREMENTS

1. A Financial Status Report report describing expenditures shall be submitted for this task in accordance with Section F.2 of the basic contract. A standard licensee fee recovery costs report should also be included.
2. Management and Organization Evaluation plans as described in Section II, shall be submitted at the beginning of the week prior to the second team meeting.
3. Technical Progress reports, as described in Section II, shall be submitted in accordance with Section F.3 of the basic contract.
4. Contractor input to the Evaluation Team Report shall be submitted within two (2) weeks of the completion of the onsite evaluation.

### VI. MEETINGS AND TRAVEL

Three (3) trips to NRC, Rockville, Maryland for preparation during August and September 1994, totaling five (15) working days.

One (1) trip to onsite and corporate headquarters during September and October 1994, totaling twelve (12) working days. Approximately one (1) day will be at corporate, ten (10) days onsite, and travel time.

Transportation between airports and site/corporate and transportation while onsite will be provided by the NRC.

One (1) trip to NRC, Rockville, Maryland during October 1994 to participate in report writing, totaling ten (10) working days.

VII. NRC FURNISHED MATERIAL

The NRC will provide necessary background information such as licensee organization charts, inspection reports, safety program descriptions, or other material/guidance specified by the Team Manager.

From: Jack W. Roe (JWR) (NRR)  
To: JXL (James Lieberman, OE)  
Date: Monday, September 26, 1994 3:24 pm  
Subject: Cooper DFI on Heavy Loads -Forwarded

Forwarded mail received from: JRH

I AGREE.

CC: JRH, WDB

Files: m0:MESSAGE

H/7

From: James Randall Hall (JRH) (NRR)  
To: JEB2 (James Beall, OE)  
Date: Tuesday, October 4, 1994 10:51 am  
Subject: Cooper DFI on Heavy Loads -Forwarded -Fo

Forwarded mail received from: JWR

Jim,

Here's the message that Jack Roe sent to Jim Lieberman (He forwarded my recommendation to my boss, Bill Beckner).  
I was never assigned the task of preparing a memo from Zimmerman to Lieberman as we do for typical escalated enforcement actions, as it was my understanding that this DFI was a unique action and Roe and Lieberman had agreed on providing our position informally.

Randy Hall  
504-1336

Files: m0:MESSAGE, m1:MESSAGE

H/8

December 2, 1994

MEMORANDUM TO: The Chairman  
Commissioner Rogers  
Commissioner de Planque

FROM: James M. Taylor  
Executive Director for Operations  
*Original signed by James M. Taylor*

SUBJECT: COOPER NUCLEAR STATION SPECIAL EVALUATION

The Nebraska Public Power District (NPPD) initiated a Diagnostic Self Assessment (DSA) evaluation of the Cooper Nuclear Station (CNS) from July 25 through August 19, 1994 to obtain an independent review of the operation of CNS and determine the root cause(s) for the station's declining performance.

The NRC formed a Special Evaluation Team (SET) to assess the effectiveness of licensed activities performed by NPPD in ensuring safe operation at CNS, and to determine the causes of performance deficiencies. From August 15 through 19, 1994 the SET observed the onsite activities of the DSA and evaluated CNS safety activities. The SET returned to CNS from September 26 through October 7, 1994 to evaluate NPPD corporate safety activities and complete their CNS onsite evaluation.

I am providing you with copies of the DSA and SET reports for your review in preparation for the Commission briefing on the SET evaluation on December 7, 1994.

- Attachments:  
1. NRC Special Evaluation Team Report  
2. NPPD Diagnostic Self Assessment Report

cc: SECY  
OGC  
OCA  
OPA

CONTACT: Ellis W. Merschhoff, AEOD  
(301) 415-6954

DISK/DOCUMENT NAME: G:\DEIIB\DEPFILES\DO915\COMMISS.CNS

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OFC	AEOD	AEOD	AEOD	EDD		
NAME	EMerschhoff	DRoss	EJordan	JTaylor		
DATE	11/23/94	11/23/94	11/30/94	12/1/94	1/1	

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H/9



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 2, 1994

MEMORANDUM TO: The Chairman  
Commissioner Rogers  
Commissioner de Pianque

FROM: James M. Taylor *James M. Taylor*  
Executive Director for Operations

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2. NPPD Diagnostic Self Assessment Report

cc: SECY  
OGC  
OCA  
OPA

CONTACT: Ellis W. Merschoff, AEOD  
(301) 415-6954



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

MEMORANDUM TO: The Chairman  
Commissioner Rogers  
Commissioner de Planque

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Executive Director for Operations

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- 2. NPPD Diagnostic Self Assessment Report

cc: SECY  
OGC  
OCA  
OPA

CONTACT: Ellis W. Merschoff, AEOD  
(301) 415-6954

H/13

MEMORANDUM TO: The Chairman  
 Commissioner Rogers  
 Commissioner de Planque

FROM: James M. Taylor  
 Executive Director for Operations

SUBJECT: COOPER NUCLEAR STATION SPECIAL EVALUATION

The Nebraska Public Power District (NPPD) initiated a Diagnostic Self Assessment (DSA) evaluation of the Cooper Nuclear Station (CNS) from July 25 through August 19, 1994 to obtain an independent review of the operation of CNS and determine the root cause(s) for the station's declining performance.

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1. NRC Special Evaluation Team Report
2. NPPD Diagnostic Self Assessment Report

cc: SECY  
 OGC  
 OCA  
 OPA

CONTACT: Ellis W. Merschoff, AEOD  
 (301) 415-6954

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OFC	AEOD		AEOD		AEOD				
NAME	EMerschoff		DRoss		EJordan				
DATE	11/ /94		11/ /94		11/ /94		/ /		/ /

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OFFICE OF THE SECRETARY

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

December 9, 1994

~~Action: Lieberman, OE~~

Cys: Taylor  
Milhoan  
Thompson  
Blaha

23

MEMORANDUM TO: James M. Taylor  
Executive Director for Operations  
FROM: John C. Hoyle, Acting Secretary  
SUBJECT: SECY-94-285 - PROPOSED \$300,000 IN CIVIL  
PENALTIES TO NEBRASKA PUBLIC POWER DISTRICT  
CONCERNING VIOLATIONS AT THE COOPER NUCLEAR  
STATION (EAs 94-164, 94-165, 94-166)

This is to advise you that the Commission has not objected to the proposed civil penalty to the Nebraska Public Power District.

cc: The Chairman  
Commissioner Rogers  
Commissioner de Planque  
OGC  
OCA  
OIG

SECY NOTE: THIS SRM AND SECY-94-285 ARE ENFORCEMENT RELATED AND WILL BE LIMITED TO NRC UNLESS THE COMMISSION DETERMINES OTHERWISE.

H/10

From: Nancy J. Olson .(NJO) (NRK)  
To: JEB2 (James Beall, OE)  
Date: Thursday, February 9, 1995 8:35 am  
Subject: ENFORCEMNT ACTION 95-012

Jim:

Roy Zimmerman asked me to E-Mail you regarding Enforcement Action 95-012 on Cooper.

Roy concurred on the package on 2/8/95. I gave it to Randy Hall who will be dispatching you a copy today. Randy is the PM for Cooper.

Nancy

H/11

50-298



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 10, 1995

MEMORANDUM TO: The Chairman  
Commissioner Rogers  
Commissioner de Planque

FROM: James M. Taylor *[Signature]*  
Executive Director for Operations

SUBJECT: RESTART OF THE COOPER NUCLEAR STATION

This memorandum is to inform the Commission of the status of the restart of the Cooper Nuclear Station (CNS) and the related staff actions.

Background

The Cooper plant was shut down by the licensee on May 25, 1994, as a result of the discovery of significant problems with the electrical distribution system, the control room emergency filtration system, and containment integrity. Additional weaknesses were identified in the areas of surveillance testing, review of industry operating experience, and the performance of the station operations review committee (SORC). These issues were the subjects of two confirmatory action letters (CALs): CAL 4-94-06, dated May 27, 1994, and Revisions 1 and 2, dated June 16 and July 1, 1994; and CAL 4-94-08, dated August 2, 1994. The SORC performance issues were addressed in a letter from the Regional Administrator of Region IV to the Nebraska Public Power District (NPPD), dated August 25, 1994. The CALs and the letter of August 25, 1994, documented the NRC staff's understanding that the identified issues would be satisfactorily resolved by the licensee before plant restart.

In a letter to NPPD dated June 21, 1994, following the June 1994 Senior Management Meeting, the Executive Director for Operations expressed continuing concern regarding the observed negative trends in performance at the Cooper plant, as underscored by the problems associated with the shutdown of May 25, 1994. As a result of these concerns, senior NRC management determined that additional insight into the performance of CNS management and staff was needed. At the same time, the licensee indicated its intention to sponsor a third-party diagnostic self-assessment (DSA) based on NRC diagnostic evaluation principles. This decision by the licensee allowed the NRC to build upon the DSA process with a Special Evaluation Team (SET) inspection, rather than the more traditional Diagnostic Evaluation Team inspection. The DSA, conducted from July 25 through August 19, 1994, attributed the significant performance deficiencies of the Cooper plant to (1) management's failure to foster high standards for the workforce; (2) weaknesses in long-range planning; (3) ineffective oversight by management and quality assurance staff;

CONTACT: J. R. Hall, NRR  
415-1336

H/12

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and (4) deficiencies in the testing, configuration control, and corrective action programs. The NRC SET assessment, conducted from August 15 through October 7, 1994, found that the DSA was an effective and comprehensive assessment and that the DSA findings closely paralleled the independent findings of the SET. The SET concluded that (1) the licensee's management did not provide adequate leadership or direction; (2) major programs and processes were poorly defined; and (3) independent oversight and self-assessment were not effective in detecting deficiencies, nor in ensuring adequate corrective action.

### Discussion

Because of the nature and extent of the managerial and programmatic weaknesses observed at the Cooper plant, as confirmed by the DSA and the SET, the NRC staff initiated a formal process for the review of plant readiness for restart in accordance with NRC Manual Chapter 0350, "Staff Guidelines for Restart Approval." The Cooper Restart Panel was formally established on November 10, 1994, and developed the "Cooper Nuclear Station Restart Action Plan," which specified the issues that the licensee must adequately address before restart of the facility.

The panel held several internal meetings to develop the Restart Action Plan, which identified 13 major issues to be addressed by the licensee. In reviewing the licensee's extensive three-phase performance improvement program (PIP), the panel determined that the 13 issues of the Restart Action Plan were included in the licensee's own restart list of 35 issues and that the PIP provided an acceptable process for addressing the restart issues. To ensure that the licensee adequately implemented its PIP, the panel identified areas in which NRC inspection and technical review were needed. The panel subsequently considered the results of these inspections and reviews.

The panel determined that the licensee had successfully completed the first phase (restart) of the PIP, which addressed the CAL issues, as well as the fundamental managerial weaknesses identified by both the DSA and the SET. The restart panel reviewed extensive inspection data collected over several months, including the findings of an NRC restart team inspection conducted from January 16 to 27, 1995. In addition, the panel held five public meetings with the licensee at the site, from November 8, 1994, through February 2, 1995, to review the progress made in implementing the PIP. On February 2, 1995, the restart panel recommended that NRC management grant approval for the restart of Cooper Nuclear Station. On February 6, 1995, the Regional Administrator of Region IV, after consultation with the Office of the EDO and NRR, granted NRC approval for plant restart.

The licensee began startup and power ascension on February 9, 1995. An interim restart organization has been formed, including a dedicated Restart Manager, 24-hour site management coverage, an augmented operating crew on shift and a continuously staffed, dedicated work control center. The power ascension plan calls for hold points at 50-percent and 90-percent power, and includes a contingency shutdown from 30-percent power for corrective maintenance, if necessary. The licensee plans to reach 100-percent power in approximately 3 weeks.

During plant startup and power ascension, the NRC resident inspection staff will be augmented to provide close oversight of surveillance testing and maintenance, two areas of weakness that led to the extended plant shutdown. In addition, operations will be closely monitored. Twenty-four-hour NRC staff coverage was implemented on February 6, 1995, and will continue through March 5, 1995, as currently planned. The Cooper Restart Panel will continue to oversee the licensee's performance throughout startup and power ascension.

cc: OGC  
 SECY  
 OPA  
 OCA  
 NRR  
 RIV

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*by telcom*