

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-295/89030(DRS); 50-304/89030(DRS)

Docket Nos. 50-295; 50-304

Licenses No. DPR-39; No. DPR-48

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Zion Nuclear Power Station - Units 1 & 2

Inspection At: Zion, IL 60099

Inspection Conducted: September 11 through October 18, 1989

Inspectors:

[Signature]
T. T. Yin
[Signature]
V. P. Lougheed

11/14/89
Date

11/14/89
Date

Approved By: Monte P. Phillips, Chief
Operational Programs Section

[Signature]

11/14/89
Date

Inspection Summary

Inspection on September 11 through October 18, 1989 (Reports No. 50-295/89030(DRS); No. 50-304/89030(DRS))

Areas Inspected: Routine, announced inspection of licensee corrective actions initiated for the issues identified in the NRC Safety Systems Outage Modification Inspection (SSOMI) of Unit 1. Areas inspected included licensee cable separation walkdown and correction of deficiencies being identified, and licensee control of system temporary alterations (Inspection Procedures 30703 and 92702).

Results: The following conclusions were reached by the inspectors:

- o The licensee showed improvements in their temporary alteration program, especially in regard to ensuring off-site review of safety evaluations and updating of control room drawings or other operator information.
- o In the area of cable separations, problems were apparent regarding the instructions provided to the craft performing the work, followup on deviation reports, and management oversight of contractor engineering work.
- o With regard to reactor coolant pump 2A vibration, corrective actions implemented were inadequate in that no deficiency report was generated, no review was performed concerning the effects of the deficient condition on the steam generator bumper locations, and no review was performed to determine whether the deficient condition also applied to Unit 1 (which it did).

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- ° There continued to exist several temporary alterations which had been in place for extended periods of time, one in excess of ten years. However, the implementation of the new procedure may mask this issue by setting new dates for old alterations.
- ° The licensee had both a strength and a significant weakness in regard to their 10 CFR 50.59 program for temporary alterations. The strength related to the quality of the safety evaluations when completed. They were thorough, well documented, and adequately addressed the questions of 10 CFR 50.59. However, a continued violation existed in that safety evaluations were not always performed when required. This weakness appeared to be due to a lack of understanding of the requirements nor the intent behind the requirements of 10 CFR 50.59.
- ° Two violations were issued concerning the lack of adequate corrective actions for cable separation deficiencies and the failure to perform required safety evaluations.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- *T. Saksefski, Regulatory Assurance Staff
- W. Stone, Regulatory Assurance Supervisor
- *T. Rieck, Technical Superintendent
- W. Kurth, Production Superintendent
- T. Joyce, Station Manager
- R. C. Johnson, Assistant Superintendent, Maintenance
- A. Amorso, Nuclear Engineering Staff
- J. P. Kish, Engineering Nuclear Construction Staff
- *H. J. Kaczmarek, Technical Staff - Electrical
- *J. E. Rohde, Technical Staff - Electrical
- C. Schultz, QC Supervisor
- *W. T. Niemi, Technical Staff Supervisor
- *T. VanDeVoort, QA Superintendent
- P. F. Cantwell, Assistant Technical Staff Supervisor
- L. Tate, Engineering G.O. Staff
- +*J. Madden, Assistant Technical Staff Supervisor
- H. Pigon, Engineering Service Group Leader
- C. Gosch, ISI Staff
- *J. Reiss, Engineering Nuclear Construction Staff
- *A. Rosenbach, Engineering Nuclear Construction Staff
- + R. Squires, Nuclear Safety General Office
- J. Ashley, Technical Staff
- J. Hutsebaut, Technical Staff
- E. Stevens, Technical Staff

Sargent and Lundy Engineers (S&L)

- *J. J. Reddy, Site Coordinator
- S. R. Berthean, Structural Engineer
- C. Mokisewski, Electrical Project Engineer
- J. S. Steele, Senior Electrical Project Engineer
- W. E. Bergen, Senior Electrical Project Engineer

Bechtel Power Corporation

- *J. Tkalec, Electrical Field Engineer

Westinghouse Corporation (W)

- *J. Johnson, Site Representative

U. S. Nuclear Regulatory Commission (U. S. NRC)

- *J. D. Smith, Senior Resident Inspector
- A. M. Bongiovanni, Resident Inspector
- R. J. Leemon, Resident Inspector

*Indicates those attending the exit meeting at the site on September 21, 1989.

+Indicates those attending the followup exit on October 18, 1989.

2. Licensee Action On Previous Inspection Findings

- a. (Closed) Violation (295/88003-01): This item addressed inadequacies of ZAP 3-51-4 in providing control over temporary alterations. The licensee had revised their procedures to address the issues mentioned in the violation. The inspectors reviewed the revised procedures and concluded that, if properly followed, the issues of the violation were addressed. This item is considered closed.
- b. (Closed) Violation (295/88003-05): This item addressed the failure of the licensee to perform safety evaluations on three temporary alterations. The licensee performed safety evaluations on two of the temporary alterations and a preliminary safety review on the third. The inspectors reviewed these evaluations and considered them adequate. A further violation over the licensee's failure to do 50.59 safety evaluations when required has been assessed; however, this item is considered closed.
- c. (Closed) Violation (295/88003-06): This item addressed the failure to have safety evaluations performed on temporary alterations reviewed by the Offsite Review and Investigative Function. The licensee revised their procedure to ensure that safety evaluations on temporary alterations were sent to the Offsite Review organization. The inspectors reviewed the revised procedure and found it acceptable. This item is considered closed.
- d. (Closed) Violation (295/88003-07): Part B of the item discussed inadequate licensee corrective actions in response to the cable tray and separation deficiencies identified during the NRC SSOMI walkdown. This item is administratively closed. Concerns in this area are documented in Paragraph 3 of this report.

3. Electrical Separation

During the NRC's SSOMI conducted in 1988 at Zion, numerous cable and raceway configurations were observed that did not meet the FSAR commitment for independence of redundant circuits. At the time of this followup inspection CECO had completed a Cable Tray System Walkdown in Unit 2 containment, cable spreading rooms, auxiliary building, fuel handling building, and the crib house. CECO will have completed a Unit 1 containment walkdown during the current plant outage. Currently, S&L personnel had inspected 5465 cable routing points and identified 3258 discrepancies, among which 478 required engineering evaluation, and the rest were considered to be minor discrepancies. CECO issued several Work Requests (WR) to correct some of the minor problems identified, such as installing missing cable tray routing point labels, removing debris and foreign material from trays, and coiling abandoned cables. The NRC inspection covered the following areas:

a. Procedure Review

The following S&L procedures were reviewed by the inspector:

- ° PI-ZI-41, Revision 4, May 5, 1989, Cable System Walkdown and Review.
- ° PI-ZI-43, Revision 1, May 5, 1989, Engineering Analysis of Cable Tray Deficiencies.
- ° PI-ZI-50, Revision 0 April 28, 1989, Cable Separation Criteria Violation (CSCV).
- ° PI-ZI-36, Revision 0, July 20, 1987, Notification to Commonwealth Edison Company of Potential Design and Equipment Concerns.

The inspector noted that the criteria under PI-ZI-50, Section 6.0 "Reference", were the actual FSAR cable separation criteria, and Section 5.0 "Criteria" consisted of additional clarification regarding the FSAR criteria. The S&L Site Coordinator concurred with the inspector's observation and stated that a revision would be made to the procedure.

b. S&L Cable Walkdown Adequacy

On September 14, 1989, the inspector observed cable placement deficiencies including cable overfill above siderails, and cables laid outside of the trays at routing points 965W, R255, and 1094S. The inspector verified that these discrepancies were documented in the S&L walkdown packages.

Findings from a previous inspection performed by the NRC Resident Inspector (RI) in August through November 1988 (50-295/88019; 50-304/88019) were also documented by CECO.

Based on the above observation, the inspector concluded that S&L walkdowns for identifying cable deficiencies were adequate.

c. Cable Tray Covers

During a walkdown, the inspector found the cover at routing point R252 was not bolted down properly, and at routing point 1064Z, one cover was missing. Subsequent review showed that the improperly installed covers at R252 and 1064Z were the result of craft personnel placing sheet metals found on the floor onto the trays above during cleanup. Review of the associated drawings determined that covers were not required. CECO corrective actions are discussed in Paragraph 3.g.

d. Cable Rework

Very few cable deficiency reworks had been conducted. The inspector selected the following completed WRs for verification:

- (1) Cable tray routing point No. R598, S&L drawing 22E-0-3076, WR 78862. A number of cables jumped from Tray No. 2437D (2c) to Tray 2418E (2P). The instruction to the craft was "retrain cable arranged in an orderly manner below siderails of trays," even though there was no tray below the jumped cables. The craft's response was that it could not be done. It appeared that the work instruction was prepared without visually examining the deficiency.
- (2) Cable tray routing point No. R190, S&L drawing 22E-0-3062, WR 78865. Cables exited and re-entered the tray riser. The WR activities sign-off sheet showed that one worker stated that "can not arrange in an orderly manner, cable too long," dated June 1, 1989; however, another worker stated, "disregarded," and signed work completion on August 17, 1989, and also signed off "cable coiled and supported corrected on the same date." On September 13, 1989, the inspector observed cable bundles overflowing above the tray siderails on both horizontal and vertical planes of the tray, and no cables were coiled and placed in the tray. CECO re-inspected the area, and concluded that cables had been retrained but somehow bounced back after QC sign-off causing overflow at the tray turn corner.
- (3) Cable tray routing point No. 1095S, S&L drawing 22E-1-3206, WR 78854. Cable overfill was observed. The instruction to craft to retrain cable in an orderly manner below siderails of cable tray was incorrect, since the problem could only be resolved by installing siderail extensions, or accepting the condition as is through evaluation.
- (4) Cable tray routing point No. 903G, S&L drawing 22E-1-3204, WR 77820. There were horizontal and vertical turns at this routing location. Cables were pulled most likely during construction away from the tray bypassing the turns going through the floor penetration. There was fire sealing at the penetration making retraining of the cables difficult.
- (5) Cable tray routing point No. 2121F, S&L drawing 22E-0-3058, WR 78875. Cables exited and re-entered the tray. On September 14, 1989, the inspector observed that corrective measure had been taken to retrain the cables.

The improper cable tray corrective measures are considered an example of a violation of 10 CFR 50 Appendix B, Criterion XVI (295/89030-01A).

e. Zion Deviation Reports (DVR)

A number of DVRs on violation of cable separation criteria were issued prior to and during NRC SSQMI conducted in 1988. These were reviewed by the inspector:

- (1) DVR No. 22-1-88-060, three control cables were routed through a ladder rack cable tray containing non-divisional power cables. The problem was identified on April 23, 1988, during the NRC's SSQMI, and the DVR was issued on April 28, 1988. A Deviation Investigation Report (DIR) having the same identification number was issued on June 12, 1988, and recommended rework. The DIR was accepted by the station on June 28, 1988. Modification Request M22-1-88-39 was approved by PWRE on March 7, 1989, and by the station on April 13, 1989. Work will be implemented during the current Unit 1 refueling outage.
- (2) DVR No. 22-1-87-067, part 2, BOP cable No. 03662 was routed through Division 18 power cable tray, and then through a BOP cable tray. WR Z-61577 was issued on July 28, 1987. The cable could not be re-routed according to the cable tab, and this issue was referred back to the station technical staff on May 27, 1988, for evaluation. Modification Request R22-0-88-26 was presented to the Station Modification Review Committee (SMRC) on June 8, 1988, but was rejected. No corrective actions have yet been completed. During a followup discussion, the licensee stated that this issue would be re-submitted to SMRC for consideration in October 1989. An internal commitment, No. 295-200-87-06700, was issued on September 20, 1989, to track the status of the item.
- (3) DVR No. 22-1-87-067, Part 3, a 480V power feed (J-164) to fire pump battery charger No. 2 was routed in control cable trays 634 B and 631 B. The problem was identified on June 17, 1987, and the jumper was removed on February 23, 1988 (WR Z-65657).
- (4) DVR No. 22-1-88-020, BOP power cable from MCC 1243B6 to the ILRT junction box outside the fuel handling building was routed through a BOP control cable tray inside the fuel handling building. The problem was identified on February 18, 1988, and the DVR was issued on February 22, 1988. A DIR, same number, no issuance date, recommended cable re-route and was accepted by the station on May 11, 1988. No corrective action had been taken as of the dates of this inspection; however, during the inspection WR Z-85572 was issued and the cable from MCC 1343 to the ILRT panel was removed.

f. S&L Evaluation

On September 18, 1989, S&L presented to the licensee the current status of evaluations regarding the 478 cable tray walkdown discrepancies requiring engineering analysis. S&L determined that:

(1) there were 38 cases where cables with different segregation codes were routed together in varying configurations, and (2) there were 20 cases where cables of the same division having different segregation codes (e.g. 29P and 29C) were routed in the same locations. S&L had only completed documenting the following four case studies on these discrepancies:

◦ Routing Point K278 (29K)

Cable No. 36185 (29K) was routed through a section of unidentified cable pan at penetration 2E45. The problem was documented in CSCV-89-15, May 15, 1989, in accordance with PI-ZI-50 (Paragraph 3.a). The S&L engineer determined that "the violation was not acceptable and must be corrected."

◦ Routing Point 2412E (2P)

A conduit containing cable No. 27210 (28C) was routed in Division 2P tray. The problem was documented in CSCV-89-16, dated June 6, 1989. The S&L engineer determined that "the violation was not acceptable and must be corrected."

◦ Routing Point R631 (29P)

A conduit containing cable No. 06106 (28C) was routed in Division 29P tray riser. The problem was documented in CSCV-89-17, June 12, 1989. No disposition was stated in the CSCV.

◦ Routing Point 961B

A Division 18 power cable No. 10847 was routed through the other division's (Division 19) power cable tray. Although no CSCV was written S&L performed an operability analysis on May 24, 1989; and the analysis was forwarded to CECO on June 1, 1989. The inspector reviewed the analysis, and had no adverse comments.

Subsequent to the review, the inspector concluded that S&L failed to follow its procedural requirements in the following areas:

- (1) PI-ZI-41 states, in Paragraph 4.3.1, that, ". . . cable separation criteria violations identified on a Cable Discrepancy Report Form (CDRF) shall be processed in accordance with PI-ZI-50."

Contrary to the above, only 3 out of the 58 discrepancies involving cable separation criteria violations were initiated/evaluated using the CSCV forms prescribed in PI-ZI-50.

- (2) PI-ZI-50 states, in Paragraph 4.9, that "If the CSCV is unacceptable, the Senior Electrical Project Engineer shall notify the client if the violation reflects an as-built condition. He shall document this in a telephone memorandum and attach it to the CSCV form prior to returning it to the Electrical Design and Drafting Division Project Leader."

Contrary to the above, routing points K278 and 2412E discrepancies, determined to be unacceptable through CSCV evaluation, were without required documentation indicating that CECO had been informed.

The licensee had not provided sufficient oversight to maintain an awareness of the significance of the above 58 discrepancies involving cable separation criteria violations. Although S&L indicated that most of these discrepancies did not involve significant issues, no documentation was available to support this conclusion. The failure to document and report to CECO management the determinations regarding which conditions were significant is an example of a violation of 10 CFR Part 50, Appendix B, Criterion XVI (295/89030-1B).

g. CECo Corrective Action Commitments

On September 14, 1989, CECO site management met with the inspector and presented their plans to improve the cable walkdown/corrective action program. These included the following components:

- (1) Work instructions for the craft would be improved and additional engineering involvement would be provided in the areas of deficiency condition evaluation and technical resolution to the identified problems. Bechtel Work Analysts assigned to the engineering responsibilities would be qualified by CECO.
- (2) Additional instructions to the craft and QC inspectors would be provided on how to document the work and inspection performed.
- (3) CECO and S&L engineering staff would perform sample verification on approximately 10% of all the more significant cable deficiency rework that had already been completed. Based on the results, CECO would determine the need to expand the scope of verification.
- (4) CECO would continue to perform sample verification of completed work after the program upgrades discussed above were implemented.
- (5) Instruction to the craft would be provided stating that they were not to alter as-found conditions, including placing cable tray covers or sheet metals found in the vicinity onto the cable trays.

4. Reactor Coolant Pump (RCP) Vibration

The inspector reviewed the site Temporary Alteration (TA No. 88-102) providing additional vibration monitoring/measurements for the Unit 2 reactor coolant pump (RCP) 2A. The TA did not discuss the condition of the RCP. Site records showed that the staff had observed RCP 2A lower motor frame vibration increasing from 2.6 mils peak-to-peak amplitude in February 1986 to 4.5 mils (alarm setpoint level) in December 1986. The plant Abnormal Operation Procedure (AOP) 1.4 stated that if RCP vibration is greater than or equal to 5 mils, proceed to hot shutdown, then stop the affected RCP. High RCP 2A vibration continued to exist through 1987 and 1988, but did not reach the 5 mils AOP action level. In December 1988 through February 1989, Westinghouse (W) engineers were brought to the site to investigate the problem. After studies made on RCP 2A motor frame vibration motion plots in cold and hot loop conditions, the W engineers suspected that binding was occurring somewhere within the piping/equipment system. A Unit 2 inspection walkdown discovered that eight temporarily installed T-shaped brackets used for locating chain falls to handle the steam generator (SG) manway covers were left in place unintentionally between the SG bumper structure gaps. The condition was believed to have begun mid-1984 when the permanent brackets were installed on the steel structure and the temporaries were not removed. After removing the T-shaped brackets, the RCP 2A hot loop test showed significant reduction in vibration amplitude. In addition to the two vibration probes (Bently-Nevada) originally installed 90° apart at the RCP 2A lower frame, two additional vibration measurement probes were installed at the RCP 2A upper motor frame, and two at the pump shaft during the December 1988 plant outage. The AOP 1.4 high vibration hot shutdown limit was raised to 5.5 mils (using upper frame measurement) on March 16, 1989, through temporary change request TO-89-097. The RCP 2A maximum vibration measurement was observed increasing from 3.1 mils in December 1988, to 4.4 mils in September 1989; however the RCP vibration amplitude had shown a tendency to subside during cooler/cold weather months due to the RCP air cooling characteristics. The pump was scheduled to undergo inspection and dynamic balancing during hot shutdown in Spring 1990.

In review of the records and in discussions with the responsible licensee staff, the inspector determined that there was no deficiency report issued to document the plant adverse condition involving the temporarily installed T-shaped brackets that had not been removed after the task was completed. The wedging at the SG bumpers were determined by W to be the major cause of RCP 2A high vibration. At the time of NRC inspection, there was no documented information as to (1) the root cause of the adverse plant condition; (2) whether or not there was any structural deformation or damage at the SG bumper locations; (3) any possible effects on thermal expansion design LOCA, and seismic loadings resulting from leaving the temporary brackets in place; and (4) possibility of same T-shaped brackets left in Unit 1. The inspector raised these questions to the licensee on September 20, 1989; after which eight T-shaped temporary brackets were found in all eight SG bumper structure gaps on Unit 1.

The lack of CECO corrective action to document, inspect, and initiate corrective actions for the RCP 2A vibration, to evaluate the effects of the cause of the deficient condition on the SG bumper locations, and to extend the corrective actions to Unit 1 are examples of a violation of 10 CFR Part 50 Appendix B, Criterion XVI (295/89030-01C).

5. Temporary Alterations

a. General

The SSOMI had several concerns regarding the Zion temporary alteration (TA) program which were reflected in Violation Nos. 88-003-01, 88-003-04, and 88-004-05. These concerns were in the areas of (1) lack of offsite review; (2) lack of effective tracking of TAs; (3) lack of methodology to update Main Control Room drawings; (4) lack of technical evaluations; and (5) lack of safety evaluations.

In response to the above concerns, the Zion Administrative Procedures (ZAPs) 2-54-5 "Safety Review and Evaluation", 3-51-4 "Temporary Alteration Program", and 6-52-6 "UFSAR Update and 10 CFR 50.59 Annual Reports" were revised.

The inspectors reviewed the following Zion Administrative Procedures (ZAPs):

- 2-54-1 "Onsite Station Review," Revision 3, dated November 3, 1987
- 2-54-5 "Safety Review and Evaluation," Revision 3, dated August 7, 1989
- 3-51-1B "Plant Modifications," Revision 31, dated September 26, 1988
- 3-51-4 "Temporary Alteration Process," Revision 26, dated April 20, 1989
- 3-51-8 "Electrical Load Monitoring System," Revision 0, dated October 31, 1988
- 6-52-6 "UFSAR Update and 10 CFR 50.59 Annual Reports," Revision 2, dated September 8, 1989

The procedures were generally acceptable, and adequately resolved the concerns of the SSOMI with one exception: Since the SSOMI had raised specific concerns in regard to electric power issues and temporary power feeders, the inspectors reviewed the actions taken by the licensee in response to these concerns. The inspectors found a discrepancy existed between two ZAPs: 3-51-8 "Electrical Load Monitoring System (ELMS)" and 3-51-4 "Temporary Alterations." ZAP 3-51-8 Section F.1.1(b) stated that temporary alterations to non-safety related buses, as well as safety-related ones, were to be coordinated with the PWRE prior to installation. Additionally, the definition section of 3-51-8 stated that both additions and deletions of a load from a bus were included. ZAP 3-51-4 addressed only additions to safety-related buses (in a question on the technical evaluation form). The inspectors confirmed that temporary power feeders from non-safety related buses were not coordinated with the ELMS program prior to installation (if ever). This discrepancy was brought to the licensee's attention.

Additionally, while the procedures appeared adequate, problems were encountered in their application as discussed in the following paragraphs.

The inspectors reviewed a number of TAs, both open and closed, in order to assess the effectiveness of the revised procedures. The majority of the TAs were used to perform maintenance or testing activities and were closed fairly quickly (within 90 days of installation). All of the TAs reviewed complied with the requirements of ZAP 3-51-4 in regard to completion of the technical evaluation, preliminary safety review, and onsite review forms prior to installation.

b. Offsite Review

The SSOMI noted that no offsite review was performed on safety evaluations done for TAs, contrary to the requirements of the Technical Specifications. The followup inspection verified that ZAP 3-51-4 procedurally required that safety evaluations done on TAs be submitted to offsite review. The inspectors further verified that the safety evaluations were submitted, as required, through a selective review of the licensee's TA files.

c. Tracking of Temporary Alterations

The SSOMI noted that there was no effective tracking of TAs, and that some TAs had remained temporary for years. During the followup inspection, the inspectors noted that the licensee had converted from the Jumper, Lifted Lead, and Block logs used at the time of the SSOMI to a single TA log, with all old items being closed. Unfortunately, many of the closures consisted of transferring the item from the old log to the new one, with the date of installation being given as the date when the tags were changed from the old to the new systems. Additionally, the inspectors found that the TA package did not necessarily show if the alteration was a conversion from the old log.

ZAP 3-51-4 required that the licensee perform a review of all open TAs every six months. The inspectors reviewed the latest such report, which was through June 16, 1989. The report consisted of a cover letter followed by a table showing the open TAs, the responsible group, the closure mechanism, and a brief status. The inspectors noted that at the time of the report, there were 86 open TAs, of which only 23 were of less than 6 months duration. 17 TAs had been open for between 6 and 12 months, and an additional 17 had been open for between 1 and 2 years. The remaining 29 TAs had been open for more than two years; including one which was over 10 years old (L-932).

Discussions held with plant management indicated that they were aware of the problem with TAs being installed for excessive time periods. The licensee stated that their goal was to reduce the time that a TA could remain installed as temporary to less than two years with only a certain (undefined) percentage being open for more than a year. The licensee also stated that it was their intent to close outstanding TAs during the ongoing Unit 1 outage. The inspectors verified that several of the modifications to be worked during the outage would close TAs. However, this area remained one which required further licensee attention.

d. Control Room Drawings

The SSOMI noted a concern that critical control room drawings might not be updated to reflect TAs. During the followup inspection, the inspectors found that the technical evaluation form specifically required evaluation as to whether a control room drawing was affected and required revision. If also required the technical reviewer to initiate the change to the drawing. Discussions were held with technical staff and operations personnel, and the inspectors were satisfied that the operators had sufficient information as to TA status: whether through drawing updates, procedure changes, caution cards on the main control room board, or other means. The inspectors had no concerns in this area.

e. Technical Evaluations

The SSOMI voiced a concern that there was inadequate technical evaluation of TAs, especially in regard to electrical power concerns in the area of temporary power feeders. The SSOMI also noted that no engineering review was required pre-installation, and that such review was only required for safety-related TAs installed for more than 30 days.

At the time of the followup inspection, all TAs received a technical evaluation prior to installation. This evaluation was performed by a member of the technical staff, and reviewed by the Shift Foreman. Following completion of the technical evaluation and preliminary safety review (and safety evaluation, if done), an onsite review was performed on all safety-related TAs, and those nonsafety-related TAs which received a safety evaluation. Finally the Shift Engineer reviewed the completed TA package prior to authorizing its installation. The onsite PWRE engineering group still performed its review post-installation on safety-related TAs installed for more than 30 days.

The technical evaluation form consisted of a number of questions which were to be answered with a brief explanation. The questions, if properly responded to, adequately assessed the acceptability of the TA. During review of the temporary alterations, the inspectors found several examples where the written technical evaluations were inadequate in that they responded with only "no" or "yes" answers without explanation. Discussions with the licensee indicated that

the temporary alterations were receiving an appropriate technical review, based on technical and operating staff knowledge and discussions, even though the conclusions were not always well documented.

A specific example of the above concern was the technical evaluation for temporary alteration 88-106 which capped a thimble tube. The technical evaluation stated that the question regarding design inputs (such as pressure and temperature) was "not applicable." Since the cap constituted the reactor coolant pressure boundary, and since it was procured as a non-safety related item, the inspectors questioned whether appropriate design inputs, such as RCS pressure and temperature and material compatibility had been considered. The licensee was able to show that the cap used was acceptable and the inspectors had no further concerns on the technical evaluation.

f. Safety Evaluations

During the SSOMI it was noted that safety evaluations were not being performed on temporary alterations in violation of the requirements of 10 CFR 50.59. In response to this concern, the licensee implemented a program requiring a "Preliminary Safety Review" to be performed prior to any change, either permanent or temporary, being implemented. This procedure applied not only modifications but also to procedure changes. The licensee also revised the procedure and forms used when safety evaluations were required.

The preliminary safety review addressed three areas: technical specifications, FSAR, and nuclear safety, by asking a number of questions. If all the questions were answered "no," then a safety evaluation was not required.

The inspectors found that the proper completion of the preliminary safety review form was highly dependent upon the personnel involved. There appeared to be a tendency to either overlook items or to prescribe a narrow and inappropriate definition of what "as described in the FSAR" or "involving a change in the technical specification" meant. When safety evaluations were performed, the licensee did an adequate job of responding to the questions of 10 CFR 50.59. The revised procedure and form for safety evaluations may have aided in this improved response.

The following examples were discussed with the licensee in regard to the need for doing a 10 CFR 50.59 safety evaluation. The licensee agreed with the first example but incorrectly concluded that the preliminary safety reviews had been properly completed in the other cases and no safety evaluations were required.

- (1) TA 89-010: This TA involved placing temporary heat tracing on the pressure sensing line to boric acid transfer pumps 1A, 1B, and 2A. This was a carryover from the old Jumper Log system

(J-130) and was originally installed in 1985. This TA was significant only in that it was a direct mis-application of the preliminary safety review procedure.

During several conversations with the licensee, they stated that their interpretation of 10 CFR 50.59 allowed something to be addressed in the FSAR without a safety evaluation being required, provided the description in the FSAR did not change. This philosophy is directly reflected in ZAP 2-54-5 Step F.2.1.a.3 which stated "Determine if the change alters a system, component, or structure from its description in the SAR." The three choices available were: (1) The item was not described in the FSAR. (2) It was described, and the change altered the description in the FSAR (safety evaluation required); or (3) it was described, but the change did not alter the description, in which case no safety evaluation was required. However, this approach is contrary to NRC requirements, which require performance of a 50.59 safety evaluation if the facility as described in the Safety Analysis Report is changed.

Inasmuch as 10 CFR 50.59 is based on what is in the Safety Analysis Report, it is important that the FSAR be updated to ensure that the information required by 10 CFR 50.71(e) accurately reflects the licensing basis for the plant. 10 CFR 50.71(e) states that the update submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirements since the last updated FSAR; and shall include all changes made in the facility or procedures as described in the FSAR; all safety evaluations performed by the licensee either in support or requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question; and all analyses of new safety issues performed by or on behalf of the licensee at Commission request. If the change involves a structure, system, or component which is part of a larger structure, system or component which is described in the safety analysis report, and if the change effects the design, function, or method of performing the function of the larger structure, system, or component as described in the safety analysis report, then a safety evaluation is required, because the change involves the facility as described in the safety analysis report.

Contrary to the requirements of ZAP 2-54-5, no safety evaluation was done for TA 89-010 although it altered the description for boric acid heat tracing as presented in Section 9.2.2.6.35 of the FSAR. This section stated that all boric acid containing lines were heat traced and that the heat tracing was considered

a vital load operable from the diesel generators. The temporary power feeder for the heat tracing supplied under TA-89-010 was powered from a non-vital bus that could not be supplied by the diesels, and thus constituted a change from the configuration described in the FSAR. This discrepancy was discussed with the licensee during the course of the inspection and they agreed that a safety evaluation was required by their procedure. The licensee stated at the exit that they had completed the evaluation, but were not ready to release it at that time. The inspectors reviewed the safety evaluation during the followup visit in October and found it adequate. The failure to follow the procedure and perform a safety evaluation as required is considered an example of a violation of 10 CFR 50.59 (295/89030-02A).

- (2) TA 88-022: This TA broke, at a flange, the quench line leading to and the drain line leading from the mechanical seals for residual heat removal (RHR Pump 2A). The purpose was to promote seal drainage to prevent borated reactor coolant system (RCS) water from standing against the seals, thus prolonging seal life. The quench line had a normally closed valve; however, this valve did not originally serve as the ECCS post-LOCA pressure boundary. A similar alteration was done on the 2B RHR pump (TA 88-121) and on the Unit 1 pump (TA-88-120).

The inspector discussed with the licensee the concern of leakage past the valve and the potential for increased off-site doses post LOCA. The inspector stated that this had the potential of being an unreviewed safety question in that the licensee had failed to document the basis for concluding that the consequences of an accident (post-LOCA offsite dose releases) were not increased. The inspectors also noted that the other temporary alterations, enacting this change on the other RHR pumps, did have safety evaluations although they failed to address the inspector's concerns.

A preliminary safety review was done which concluded that no safety evaluation was required. The licensee agreed to do a safety evaluation but stated that they did not feel it was required. The inspectors reviewed this safety evaluation and concluded that the licensee had adequately shown that the consequences of leakage past the valve were less than that already analyzed and that the change did not constitute an unreviewed safety question.

This is considered an additional example of a violation of 10 CFR 50.59 (295/89030-02B).

- (3) Procedure Change Request MMSP-89-001. Although this is not a temporary alteration, it provided yet another example of a failure to do a safety evaluation. The procedure change allowed for testing of the main steam safety valves (MSSVs) in place while the reactor was at power. Previously, the valves were tested by being removed from place during an outage and being shipped to a testing facility. The intent of the test was to provide greater accuracy of the MSSV setpoints since there had been previous occurrences where the MSSVs were out of tolerance.

The licensee performed a preliminary safety review on the procedure and concluded that no safety evaluation was necessary, although the change resulted in performance of testing not described in the UFSAR.

Chapter 14.2.5-1 of the UFSAR discussed the accidental depressurization of the main steam system due to the inadvertent opening of an MSSV. The section labeled this event as an "ANS Condition III event a fault of moderate frequency." The testing of the MSSVs while at power challenged these valves and increased the probability that one could fail open, which would result in the event analyzed in the UFSAR. This then could result in an increased probability of the event occurring.

During the October followup inspection, the licensee provided additional information that indicated to the inspectors that they might have been within the bounds of the previously analyzed event. However, the licensee contended that they were not required to perform a safety evaluation to document the information. As noted above, this position is contrary to NRC requirements.

Based on the above, the inspector concluded that the licensee was required to complete a safety evaluation to document that an unreviewed safety question did not exist. This is also considered a violation of 10 CFR 50.59 (295/89030-02C; 304/89030-01A).

The above examples, including the two cases where safety evaluations were not performed and the potential for an unreviewed safety question existed, caused the inspector to question the adequacy of the implementation of the preliminary safety review form. The examples indicated that the original corrective actions from the SSOMI findings had been partially effective. The inspectors were concerned that other examples of misuse of the preliminary safety review form may have existed.

6. Exit Interview

The inspectors met with licensee representatives (as denoted in paragraph 1) at the conclusion of the inspection on September 21, 1989, and on October 18, 1989, and summarized the purpose, scope and findings of the inspection. The licensee stated that the inspectors had no access to proprietary information.