

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No: 50-346/98011(DRS)

Licensee: Centerior Service Company

Facility: Davis-Besse Nuclear Power Station

Location: 5503 N. State Route 2
Oak Harbor, OH 43449

Dates: August 3-6, 1998, in Region III Office
August 10-14, 1998, onsite

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Division of Reactor Safety

EXECUTIVE SUMMARY

Davis-Besse Nuclear Power Station
NRC Inspection Report 50-346/98011

This announced inspection reviewed the effectiveness of the corrective action program. In addition, a sample of current short term corrective actions and long term corrective actions as well as a sample of engineering items were reviewed.

Operations

- The team concluded that the corrective action process at Davis-Besse was proactive and effective. Enhancements and improvements continued to be made in identification, resolution, and prevention of problems. The threshold for identifying problems was appropriately low and root cause evaluations were thorough.
- The operating experience program effectively assessed operating experience, informed the proper personnel of the assessments, generated technically sound corrective actions when appropriate, and correctly implemented the actions.
- The team concluded that the licensee effectively captured the scope of the identified problems and resolved issues through the Potential Conditions Adverse to Quality Reports (PCAQRs). However, more consideration could be given concerning Probabilistic Risk Assessment when categorizing PCAQRs such as the station blackout breaker failure PCAQR.
- The assignment of root cause analysis responsibility to the line organization and having management oversight early in the PCAQR process was an improvement in the root cause evaluation process. The team found that recent root cause analysis reports were thorough and effective.
- The audit activities by the Independent Safety Evaluation Group and Quality Assurance were effective, straight forward, and supported by the line organization. The issues identified by the audit group were supported by the line management and appropriate corrective actions were taken.
- The team concluded that management was committed to making the corrective action program effective. Significant management time was expended prior to meetings to ensure the PCAQRs addressed the full scope of each issue. Management support for the initiation of PCAQRS was also good.
- The staff supported the corrective action process and recognized the program as an effective way to resolve issues.

Engineering

- Based upon review of selected 10 CFR 50.59 screening documents and safety evaluations, the team concluded that performance in this area was good. The screenings and evaluations were thorough and accurately reflected the licensee's methodology for assuring deviations from design, as defined in the Updated Safety Analysis Report did not impact plant safety.

Report Details

I. Operations

O7.1 Corrective Action Program

a. Inspection Scope (40500)

The corrective action program at Davis Besse was in the process of being changed due to licensee identified issues. The team reviewed the current program and the recent changes.

b. Observations and Findings

The corrective action program at Davis-Besse continued to make enhancements to the corrective action process. Davis-Besse formed a Corrective Action Process Improvement Team to re-engineer the corrective action process. The short term actions included forming a Management Review Committee to perform initial screening of Potential Conditions Adverse to Quality Reports (PCAQRs), implementing a new Corrective Action Tracking System, and developing a method to close Category 2 through 4 PCAQRs that have actions substantially completed yet provided long-term tracking of follow up items on the Corrective Action Tracking System. Future planned changes included having the corrective action process become a line management function with the integration of self assessments into the process.

Problems were identified solely through the PCAQR process, which placed all the information into one data base and improved trend identification and tracking. Significant corrective actions received interdisciplinary review through the PCAQR review board, and the Station Review Board reviewed all Category 1 PCAQRs. Quality Assurance, Quality Control, and supervisors were active in field observations to improve problem prevention.

The threshold for writing a PCAQR was low and the number of PCAQRs generated was good. Personnel interviewed indicated a willingness to identify problems. The personnel also considered that management supported the program, that there was process ownership at all levels of the plant staff, and that PCAQRs written against their work products or actions were not perceived negatively. Based on the sample of PCAQRs reviewed by the team, the root cause evaluations were thorough and effective.

The team also observed several noteworthy practices regarding the corrective action process.

- Monthly PCAQR reports noted extension requests and administrative errors.
- The PCAQR initiator remained part of the process through feedback on the final resolution of the PCAQR.

- A monitoring program (STRIVE card), recently initiated by Electrical and I&C maintenance supervisory personnel, was used to monitor job site performance and reinforce positive behaviors.

c. Conclusions

The team concluded that the corrective action process at Davis-Besse was proactive and effective. Enhancements and improvements continued to be made in identification, resolution, and prevention of problems. The threshold for identifying problems was appropriately low and root cause evaluations were thorough.

O7.2 Operating Experience Program

a. Inspection Scope (40500)

The team evaluated the adequacy of the licensee's programs that implement operating experience information. Personnel were interviewed and selected records were reviewed.

b. Observations and Findings

The licensee implemented the operating experience program by dividing the information into three categories with responsibility for each category in different departments. Within each department's area of responsibility, a process was maintained to review and screen operating experience items for development of responsive action and for review and evaluation of the effectiveness of the responsive actions taken.

- The Institute of Nuclear Power Operations related documents were the responsibility of the Quality Department with a coordinator in the Independent Safety Evaluation group. PCAQRs tracked some Institute of Nuclear Power Operations notifications that dealt with potential operability concerns and the Shift Supervisor was advised. The information was screened and routed to the appropriate department. The operating experience coordinator made the information available to the staff via the shared internal computer network and a weekly Operating Experience Report.
- The NRC related documents were the responsibility of Regulatory Assurance and each document was issued a PCAQR and tracked.
- The vendor information such as Service Information Letters, Electric Power Research Institute reports, and 10 CFR Part 21 notifications were the responsibility of the engineering department. Generally only Part 21 information was tracked by PCAQRs. Some engineering staff members maintained external industry contacts which provided additional operating experience information.

The effectiveness of the system was demonstrated by the following examples:

- The licensee responded to an operating experience at Fort Calhoun and discovered the potential of a hot short on the emergency diesel generator (EDG) tachometer control circuit which could cause failure of the EDG speed switch. The failure in the speed switch would prevent the EDG from performing its intended safety function. Proactive short term actions were taken by disconnecting and isolating the tachometer leads, and long-term plans such as installing a separate tachometer circuit were being considered.
- The licensee took prompt and appropriate corrective actions to Operating Experience Reports concerning General Electric Type SBM switches that did not spring return to the neutral position after the handle was released. Davis Besse had over 200 SBM switches. The potential problem scope was narrowed by first eliminating switches that did not have the spring return feature and further narrowed by eliminating switches that were received prior to the manufacturing dates associated with the problem. The remaining switches were individually checked for date codes. No switches were found in the suspect date code range. All SBM switches in stock were also examined for the suspect date codes. The team considered the response to this issue to be timely as the PCAQR was issued within 21 days of the Part 21 being issued and corrective actions completed within 4 months.

c. Conclusions

The operating experience program effectively assessed operating experience, informed the proper personnel of the assessments, generated technically sound corrective actions when appropriate, and correctly implemented the actions.

07.3 PCAQR Review

a. Inspection Scope

The team reviewed and evaluated corrective actions for selected PCAQRs initiated during the past three years.

b. Observations and Findings

During this inspection over 40 PCAQRs were reviewed to differing extents. The team determined that the program had a low threshold for initiating PCAQRs and that the program was providing appropriate resolution of the issues. Several of the reviewed PCAQRs are discussed below.

- PCAQR 97-0127 identified that the reactor coolant pump (RCP) oil lift system piping may not meet the requirements of 10 CFR 50, Appendix R, Section III.O. The problem was identified during a receipt inspection on an RCP motor returned from the manufacturer. The licensee expanded the scope and further

investigation found that two issues existed on all four installed pump motors: (1) piping for the lower oil bearing level switch drain appeared to extend outside of the oil collection enclosure and (2) the remote oil fill lines did not appear to be protected.

The licensee determined that the failure to extend the oil collection system over the lower bearing level switch drain was an inadvertent omission during the original design and installation. The remote fill lines were not included because they had not been considered part of the RCP motors. The analysis concluded that the piping was of substantial construction; the piping was not pressurized; and that a leak in the oil drain line, while extremely remote, would be detected by the low level alarm. Heat detectors above each motor would alert the control room personnel and the operators could take appropriate action. Therefore, the lack of oil collection at the limit switch drain pipe and fill line was considered to be of minimal safety significance.

The corrective action was to place administrative restrictions on the use of the oil lift pump and to design appropriate oil collection covers to be installed at the next outage. The installation was completed at the next outage subsequent to the discovery of the missing collection devices. The team concluded that identification of this problem and expansion of the problem scope was proactive and effective.

- PCAQR 98-1333. This PCAQR was initiated to investigate why the initial evaluation of PCAQR 98-1292 was not accurate. PCAQR 98-1292 was initiated to document the failure of circuit breaker ABDC1 to close when operators attempted to transfer buses C1/C2 supply from EDG #1 to bus B. This action was being taken in response to loss of offsite power the plant sustained as a result of tornado damage on the evening of June 24, 1998. The initial incorrect assessment identified the breaker failure as a procedure inadequacy. However, the correct cause of failure was an inadequate gap between the floor cam and the trip plunger that rides on the cam. When there was insufficient gap between the cam and plunger, the mechanical shock of the breaker closing could cause the breaker to trip free.

The licensee replaced and tested the new breaker to assure operability. To prevent the occurrence of inaccurate evaluations, the licensee was enhancing their root cause evaluation process to improve accuracy. The team considered that the response to the incorrect evaluation was prompt and thorough.

- PCAQR 98-0020. This PCAQR questioned whether post maintenance testing of the 4160 volt under voltage relays was adequate. Both the 90 percent and the 59 percent relays were tested simultaneously after reinstalling the relays in their respective cases. The operability of the relays was not questioned since they had passed the monthly operability tests. Since the relays were functionally tested, the licensee concluded that an adequate post maintenance test was performed. The team concurred with the licensee's conclusion.

During review of this PCAQR, the team questioned whether the 7.5 second time delay at 90% voltage met the intent of NRC Branch Technical Position PSB-1. While Davis-Besse was not committed to PSB-1, the 7.5 second delay was insufficient to allow bus voltage to recover from dips when starting certain large loads such as an RCP or a circulating water pump. When starting one of these loads, the operators had to bypass under voltage protection from the control room to avoid an under voltage trip. Also, at minimum voltage of 70%, the high pressure injection pump required 6.21 seconds starting time according to the vendor manual. Actual starting time for the high pressure injection pump had not been measured. Although use of the undervoltage relay bypass button was approved by the NRC, the team concluded that holding the bypass button while starting a large load introduced an unnecessary, though small, risk to plant electrical equipment. In addition, the automatic start of large equipment could cause an undervoltage trip.

- PCAQR 96-0778. Circuit breaker AD213, station blackout tie breaker failed to close during the dead bus load test. Troubleshooting indicated an open contact on relay 86X/AD213, a General Electric type HFA multicontact auxiliary relay. The troubleshooting identified a high resistance on the contact apparently caused by marginal contact wipe. Electricians cleaned and burnished the contact, adjusted contact wipe and time tested the relay. The relay tested within the proper times. This was the second failure of relay 86X/AD213 recently. Licensee personnel stated that the same failure had occurred approximately three weeks previously but the work order had not been implemented to correct the problem. The team questioned why this PCAQR was a Category 3, which was the lowest category for components important to safety, when the loss of the station blackout diesel during a loss of offsite power was a significant contributor to core damage frequency under probabilistic risk assessment.
- PCAQR 97-1134. This PCAQR was initiated to address recent circuit breaker problems at another nuclear power plant. Davis-Besse uses circuit breakers similar to those used at the other plant. The licensee initiated a review of circuit breaker maintenance practices to determine what remedial actions were necessary to improve circuit breaker performance. As a result of the review of circuit breaker maintenance, the licensee began their remedial program. Trending of breaker performance for each type breaker was initiated.

Preventive maintenance procedures were revised to add specific guidance to check if grease was contaminated. Specific instructions were included for identification and replacement of hardened grease. Additional training on the circuit breaker lubrication was being provided to electrical maintenance personnel involved in circuit breaker maintenance. Included in their maintenance procedures was the replacement of grease in bearings and on sliding surfaces with light oil. The replacement of grease with oil was not one of the lubrication practices recommended by the vendor's manuals. The licensee has used oil on

selected breakers on a trial basis and was trending the results. The breakers will be specifically inspected for wear at those points where the oil was used in place of grease.

The licensee was reviewing their circuit breaker refurbishment schedule. The schedule will be based on the trending program to determine the optimum times between refurbishments. In addition, contractors were being evaluated for 480 volt breaker refurbishment. The team considered that the circuit breaker actions taken by the licensee demonstrated a good start toward resolving the issues.

c. Conclusion

The team concluded that the licensee effectively captured the scope of the identified problems and resolved issues through the PCAQRs. However, more consideration could be given concerning probabilistic risk assessment when categorizing PCAQRs such as the station blackout breaker failure PCAQR.

O7.4 Root Cause Analysis Process

a. Inspection Scope (40500)

The team evaluated the effectiveness of the root cause analysis process, reviewed selected root cause analyses associated with PCAQRs, and interviewed personnel.

b. Observations and Findings

Davis-Besse had initiated actions to improve their root cause analysis process. Both a 1997 audit and the Company Nuclear Review Board had raised concerns about the consistency and depth of root cause analysis at Davis-Besse (see Section O7.5 for details about the audit). The improvement actions included holding the department assigned the evaluation responsible for providing an evaluator, a newly developed Root Cause Analysis Desk Guide for consistent evaluations, and a newly formed Management Review Committee involved in the assignment of root cause investigations.

The team reviewed several recent root cause analysis reports to evaluate overall effectiveness. Examples of the reports are discussed below.

- PCAQR 98-0063: After a 1985 event, Davis-Besse made a commitment to NRC to inspect each auxiliary feed pump turbine every refueling outage. This commitment was not captured in the preventive maintenance program and was, therefore, not performed. Davis-Besse correctly expanded the root cause to include an evaluation of the adequacy of the commitment program. The licensee discovered fundamental problems including the TERMS database not having a clear wording of the actual commitment, deviating from commitments based on undocumented justification, and personnel changing implementing documents

without researching the actual commitment. The team concluded that the recommended corrective action plan was addressing the issue.

- PCAQR 98-0016: During performance of a reactor coolant system water inventory balance, the reactor coolant pump seal return valve rather than the adjacent demineralizer water to containment valve was inadvertently closed for several seconds. The root cause determination identified three root causes: less than adequate work practices, verbal communications, and inadequate supervisory methods. Each cause had thorough in-depth analysis of multiple contributing factors. Generic implications and previous occurrences were evaluated. The corrective action plan addressed individual counseling, management reinforcement of expectations, and operator training.
- PCAQR 98-0934: Written recently to evaluate the collective significance of six other PCAQRs dealing with foreign material exclusion problems in the spent fuel pool, reactor vessel, containment, and emergency core cooling system rooms. The licensee proactively expanded the corrective actions and scope by creating a Foreign Material Task Team for multi-discipline corrective actions that were ongoing. The task team appropriately addressed the specific issues identified in the PCAQRs and planned a minor change to the foreign material exclusion procedure.
- PCAQR 97-1134: Written to evaluate Davis-Besse breakers after an operating experience report of breaker problems at another site (see Section O7.3 for detailed discussion). The licensee expanded the depth of investigation by creating the Circuit Breaker Maintenance Program Review Team. The inspection team found the completed and proposed corrective actions to be thorough.

c. Conclusions

The assignment of root cause analysis responsibility to the line organization and having management oversight early in the PCAQR process was an improvement in the root cause evaluation process. The team found that recent root cause analysis reports were thorough and effective.

O7.5 Audit Activities

a. Inspection Scope (40500)

The team evaluated the effectiveness of the audit process performed by the Quality Assurance (QA) and the Independent Safety Evaluation (ISE) groups. Selected audit reports were reviewed, cognizant personnel were interviewed, and corrective actions taken for identified items were evaluated.

b. Observations and Findings

Nine audits were reviewed for identification of issues. Although no safety significant issues were identified, each audit identified problems that needed correction. The team selected issues from each audit and found that appropriate corrective actions were either completed or in progress. Examples of the issues and the corrective actions are addressed below.

- The Reactivity Management Assessment (QAD-97-70209), performed by ISE, identified that very little emphasis had been placed on reactivity management concepts for personnel involved with maintenance activities. The assessment recommended that sensitivity training should be provided for personnel in groups involved with trouble shooting and other maintenance activities. In response to this issue, a list of reactivity sensitive systems had been generated and an administrative procedure was being written. Training was to follow the completion of the procedure.
- The same assessment identified that training for operators had not placed much emphasis on reactor theory, heat transfer, or fluid flow in recent years. A potential weakness in these areas had been documented through a knowledge survey. During training cycle 98-02, heat transfer and fluid flow were covered as part of the training. Reactor theory was scheduled to be addressed in training cycle 98-03.
- The QA audit of the Testing and Calibration Program (AR-97-TSTCA-01) identified four examples where evaluations were not performed for lost, damaged, or out of calibration radiation measuring and test equipment. This was a repeat problem from 1994 and 1996 audits. Following both of the earlier audits, the follow-up reviews by QA verified temporary compliance with procedural requirements. The auditors determined that more aggressive root cause assessment and corrective actions were needed to prevent additional recurrences. Radiation Protection evaluated the issue and determined that the root causes included unclear expectations for standards and procedures; a "not my job" attitude on the part of the testers assigned to use the instruments, when it came time to do the documentation process; inadequate supervision of the documentation process; and inadequate review and oversight of the process by technical staff personnel. Corrective actions included a 100% audit of all radiation instrument history files, procedure changes, tailgate sessions to define procedural expectations for out of service equipment logging and documentation, and required rereading of applicable procedures for all radiation protection testers.
- The QA audit for the corrective action program (AR-97-CORAC-02) found that the depth of the root cause evaluations for PCAQRs not associated to Licensee Event Reports (LERs) were more comprehensive. The less in-depth root causes for PCAQR associated with LEF's were partially due to delayed assignment of the root cause evaluation until shortly before the deadline dates required by the

LEP process. In addition, there was a limited number of individuals assigned to perform root cause evaluations. The supervisor of ISE was responsible for assigning the evaluation; however, he had control of those individuals only directly under his supervision. This resulted in most of the evaluations being performed by ISE members which caused a backlog and detracted from other ISE activities. The issue was corrected by increasing the number of root cause evaluators and holding the department assigned the evaluation responsible for finding an evaluator within that department. A management review committee was formed that reviewed PCAQRs three times a week and assigned a specific department responsibility for the root cause evaluation. The new process has improved the root cause quality and allowed ISE to return to normal activities.

During interviews with site personnel, the team determined that the auditors were well received by the audited organizations and given proper support. The auditors indicated that individuals were frank in discussing issues concerning their department. In addition, personnel appeared to recognize the advantage of having an external group perform an audit.

c. Conclusion

The audit activities by ISE and QA were effective, straight forward, and supported by the line organization. The issues identified by the audit group were supported by the line management and appropriate corrective actions were taken.

O7.6 Management and Staff support of the Corrective Action Program

a. Inspection Scope (40500)

The team evaluated the commitment of management and staff to the corrective action program through attending management meetings associated with the program. Staff support for the program was evaluated through interviews with the staff.

b. Observations and Findings

Three times a week the Management Review Committee met to review new PCAQRs. The committee recommended appropriate categorization, due dates, the need for corrective actions to prevent recurrence, the level of root cause evaluation required, and the department responsible for performing the root cause evaluation. The meetings were conducted in an efficient manner and persons involved appeared knowledgeable of the issues.

Twice a week the PCAQR Review Board met to review Category 2 PCAQRs and all PCAQRs that involved applicable NRC Information Notices. The board's function was to concur with the initial PCAQR assessment, obtain resolution, escalate conflicts to the Management Review Committee for resolution, or send the PCAQR on to the closure process. The team observed approximately 20 PCAQRs that were dispositioned within 1.5 hours. The team noted that the efficiency of the meeting was due to participants

having read all the PCAQRs and having prepared comments prior to the meeting. The team observed good interaction between the board members with no hesitation to raise differing positions. Issues raised were appropriately resolved with some PCAQRs being rejected, some sent back for further review, and others approved.

The Station Review Board met once a week to review Category 1 PCAQRs, safety evaluations, and other technical specification required reviews. The purpose of the meeting was similar to the purpose of the PCAQR Review Board. The team again noted that the board members were well prepared and the meeting progressed efficiently. The board members presented good insights and concerns, had good interactions, and took appropriate actions.

The team interviewed several staff members and found a willingness to initiate PCAQRs. In one case, an individual indicated that the supervisor's first question regarding an issue was always "have you written a PCAQR?" This example demonstrated lower level management's commitment to the program and the staff's understanding of management's expectation. The staff further expressed satisfaction with the program in its ability to correct problems. The team also noted that the corrective action program solicited feedback from the initiator of a PCAQR, to verify that the issue was properly addressed, before closing the PCAQR.

The team was informed of cases where low significance peripheral issues to a PCAQR were sometimes not documented in the corrective action section or evaluation section of the PCAQRs. However, the issues had been thought through and corrective actions had been taken. This appeared to be the result of time constraints on the staff. While this did not effect the overall corrective action process, it could have minor implications in tracking and trending of problems.

c. Conclusion

The team concluded that management was committed to making the corrective action program effective. Significant management time was expended prior to meetings to ensure the PCAQRs addressed the full scope of each issue. Management support for the initiation of PCAQRs was also good. The staff supported the corrective action process and recognized the program as an effective way to resolve issues.

III. Engineering

E1 **Conduct of Engineering**

E1 Safety Screenings and Evaluations

a. Inspection Scope

The team reviewed selected safety evaluations (SE), 10 CFR 50.59 screening documents, and associated PCAQRs. In addition, the team interviewed cognizant licensee personnel.

b. Observations and Findings

The team reviewed four 1998 screenings performed pursuant to 10 CFR 50.59. The following screenings were reviewed during this inspection.

- Revision to procedure DB-MM-09320, "Emergency and Station Blackout Diesel Maintenance." The licensee's screening correctly determined that the revision did not represent a test or experiment as defined in the Updated Safety Analysis Report (USAR).
- Cancellation of procedure DB-FP-04051, "Inspection and Maintenance of Diesel Fire Pump Engine." The licensee's screening process was accurate in its determination that the procedure cancellation did not change procedures discussed in the USAR or Fire Hazard Analysis Report.
- Alteration to Channel Calibration of 32C-1SF5059, "Station Vent Flow." The team verified that this procedure alteration was to procedure format, clarifications to existing calculations, and to provide guidance for operability determination. It was not a test or experiment described in the USAR.
- Revision to procedure DB-PF-03290, "Containment Personnel and Emergency Air Lock Doors Interlock Test." The test procedure was changed to meet technical specification Amendment No. 223 that changed the test frequency. The test was to verify that the door interlocks were operable by verifying that only one door could be opened at a time. The test was not a change to the USAR.

The team reviewed the following safety evaluations.

- SE 98-0005, "Decay Heat Exchanger Supports." During the review of the decay heat exchangers (E-27-1 and E-27-2) for the Seismic Qualification Utility Group program, it was identified that loads due to attached piping were not considered in the analysis of the heat exchanger supports nor in the seismic qualification of the heat exchangers. PCAQR 97-1174 was initiated to address this issue. Modification 97-0068 was developed and installed to correct this deficiency. The purpose of SE 98-005 was to determine whether the modification that added additional support material and welding on the decay heat exchangers supports would increase the possibility for accident of a different type than any previously evaluated in the USAR. The licensee's evaluation determined that the installation did not adversely affect any safety related structures, systems, or components and that an unreviewed safety question did not exist. The team concurred with this evaluation.
- SE 97-0032, "Safety Evaluation to Revise the Indicated Capacity for the Reactor Coolant Drain Tank and Pressurizer Quench Tank." PCAQR 96-0476 identified differences in the indicated capacities between design drawings and the USAR for both the quench tank and the reactor coolant drain tank. Corrective action for

the PCAQR directed that drawings reflect nominal tank capacity. This SE justified changes made in support of PCAQR 96-0476.

The change in quench tank capacity listed in the USAR as 800 cubic feet (approximately 6000 gallons) to reflect a nominal volume of 6700 gallons had no effect on the ability of the quench tank to perform its design function as no change was made to water levels maintained in the tank. The reactor coolant drain tank change in tank capacity listed in the USAR from a usable volume of 655 gallons to a nominal volume of 690 gallons did not affect the tank's ability to collect water from plant drains. No change was made to the water level in the tank which was automatically maintained. The team concurred with the licensee's determination that a change to the indicated capacities of the quench tank and primary drain tank did not result in an unreviewed safety question.

- SE 98-0007, "Cooldown Following a Seismic Event/Steam Generators Fed with Service Water, Solids Accumulation in the Steam Generators." PCAQR 96-1290 identified a discrepancy in the USAR concerning the quantity of dissolved and suspended solids that would be accumulated in the steam generators after injecting raw water for 24 hours. The USAR listed the quantity of accumulated solids over a 24 hour period as less than two pounds. The licensee's reanalysis indicates that raw water feed to the steam generators would result in the accumulation of approximately 240 pounds of solids in each steam generator in 24 hours. The team agreed with the licensee's evaluation that changing the USAR to reflect more accurate solids accumulation in the steam generators did not constitute an unreviewed safety question and did not reduce any margin of safety.

c. Conclusion

Based upon review of selected 10 CFR 50.59 screening documents and safety evaluations, the team concluded that performance in this area was good. The screenings and evaluations were thorough and accurately reflected the licensee's methodology for assuring deviations from design, as defined in the USAR did not impact plant safety.

E8 Miscellaneous Engineering Issues (37550)

- E8.1 (Closed) Unresolved Item (50-346/95009-02): This item was opened for not having appropriate acceptance criteria for determining the condition of emergency lighting batteries following 8-hour surveillance discharge testing. An acceptance criteria of 5.25 volts was established and current surveillance data demonstrated a low battery failure rate. This item is considered closed.
- E8.2 (Closed) Inspection Follow-Up Item 50-346/97201-09: This item was opened to follow resolution of inconsistencies between various documents for the borated water storage tank setpoint. Inspection report 50-346/98003(DRS) documented that the

inconsistencies had been resolved and only the completion of Calculation C-ICE-48.01-004 remained open to allow considerations of other issues not related to this inspection follow up item.

Revision number 5 of Calculation C-ICE-48.01-004 was approved on July 14, 1998. The team reviewed the calculation and had no further questions concerning this issue. This inspection follow-up item is closed.

V. Management Meetings

X1 Exit Meeting Summary

The team presented the inspection results to members of the licensee management on August 14, 1998. The team verified that no proprietary information used during the inspection was in the possession of the team and none of the information was documented in the report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Beier, Manager, Quality Assessment
J. Freels, Manager, Regulatory Affairs
R. Hovland, Senior Engineer, Plant Engineering
D. Imlay, Superintendent, Plant Operations
J. Johnson, Supervisor, Independent Safety Engineering
J. Michaelis, Manager, Maintenance
T. Myers, Director, Nuclear Support Services
D. Lockwood, Supervisor, Regulatory Affairs
H. Stevens, Manager, Nuclear Safety and Inspections
F. Swanger, Manager, Design Basis Engineering
G. Wolf, Engineer-Licensing, Regulatory Affairs

NRC

S. Campbell, Senior Resident Inspector
K. Zellers, Resident Inspector

INSPECTION PROCEDURES USED

IP 37550	Engineering
IP 40500	Effectiveness of Licensee Controls in Identifying, Resolving and Preventing Problems
IP 37001	10 CFR 50.59 Safety Evaluation Program

ITEMS CLOSED

CLOSED

50-346/95009-02	URI	Potential inadequate battery acceptance for emergency light test
50-346/97201-09	IFI	Several inconsistencies between documents for BWST setpoint

LIST OF ACRONYMS USED

EDG	Emergency Diesel Generator
IFI	Inspection Follow-up Item
ISE	Independent Safety Evaluation
LER	Licensee Event Report
QA	Quality Assurance
RCP	Reactor Coolant Pump
SE	Safety Evaluations
PCAQRs	Potential Conditions Adverse to Quality Reports
URI	Unresolved Item
USAR	Updated Safety Analysis Report

PARTIAL LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors reviewed the documents in their entirety, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document in this list does not imply NRC acceptance of the document, unless specifically stated in the body of the inspection report.

<u>Number</u>	<u>Dated/Rev</u>	<u>Description</u>
AR-96-CORAC-01	4/10/96	Audit - Implementation and effectiveness of the Corrective Action Program
AR-97-CORAC-02	10/16/97	Audit for the Corrective Action Program
AR-97-JUMAA-01	1/9/98	Previous JUMA corrective action effectiveness
AR-97-MAINT-01	12/3/97	Audit of the maintenance and inspection programs
AR-97-OPSNF-01	10/31/97	Audit of Plant Operations
AR-97-TSTCA-01	1/16/98	Audit of the Testing and Calibration Programs
EN-DP-01040	1/19/98 R-3	Engineering Correspondence Control/Vendor Document Processing
NG-EN-00333	8/4/98 R-3	Vendor Group Procedure
NG-NA-00112	12/11/97R-1	Correspondence Control Program
NG-NA-00702	5/26/98 R-2	Potential Condition Adverse to Quality Reporting
QAD-97-70209	12/23/97	Reactivity Management Assessment
SE96-0055	R-7	Resolution to Thermo-Lag barrier deficiencies
SE 97-0032	7/18/97	Revision of Indicated Capacity for Quench Tank and Reactor Coolant Drain
SE 98-0005	2/3/98	Decay Heat Exchanger Supports
SE 98-0007	4/3/98	Solids Accumulation in Steam Generators
SE98-0032	for site review	Temporary isolation of air receiver moisture traps
<u>PCAQR Number</u>	<u>Dated</u>	<u>Description</u>
96-0778	5/15/96	Breaker AD213 Failed to Close
96-0978	7/1/96	Boron precipitation - SB\LOCA
97-0127	1/31/97	RCP Oil Collection System
97-0137	2/3/97	Cable derating factor apparently not used
97-0423	4/1/97	Two types of grease found in fan bearing
97-1134	8/25/97	Review of breaker failures at Clinton Station
97-1222	9/15/97	SEN on 4160 volt breaker failure
97-1508	11/18/97	Safety tagging
97-1510	11/19/97	Incorrect calibration tolerances
97-1610	12/10/97	IN 97-082 follow-up
97-1624	12/12/97	Hot short on the EDG tachometer circuit
97-1658	12/18/97	Follow up to hot shorts on EDG-1 tachometer
97-1678	12/22/97	Valves in boron dilution path not in locked valve program
97-1684	12/23/97	ATC/C program problems

98-0016	1/6/98	RCP seal return valve inadvertently closed
98-0020	1/7/98	Post Maintenance Testing of UV Relay
98-0027	1/8/98	Noncompliance with commitments
98-0030	1/8/98	Post Maintenance Testing of UV Relay
98-0063	1/14/98	Commitment for inspect AFPT not performed
98-0145	1/28/98	Wrong valve weight for seismic considerations
98-0233	2/11/98	Relief Valve lifted resulting RCS discharge
98-0250	2/13/97	Follow up on OE for SBM switch failures
98-0352	3/9/98	Response to IN 98-07
98-0371	3/12/98	Incorrect calibration tolerances
98-0422	3/23/98	Inadequate testing of ICS feed and bleed interlock
98-0425	3/23/98	External event review - CRDM housing leak
98-0430	3/25/98	Pressure test requirements - Class III components
98-0551	4/13/98	MU 204 Valve failed reverse flow test
98-0555	4/13/98	Dropped polar crane control pendant
98-0641	4/17/98	Broken retaining clips on ARTS circuit cards
98-0645	4/17/98	Safety tagging
98-0668	4/19/98	Ball and cable drop from polar crane
98-0679	4/20/98	Wrong MU pump bolts tightened
98-0681	4/20/98	Personnel injury
98-0710	4/22/98	External event follow-up -- damage to RCP seal
98-0741	4/24/98	Fuel/component status board not properly updated
98-0761	4/24/98	East D ring contamination event
98-0815	4/29/98	Station Battery 2N cell 60 shorted accidentally
98-0819	4/29/98	Station Battery 2N cell 60 damaged
98-0852	5/1/98	Degraded containment coatings
98-0934	5/5/98	Collective significance of FME issues
98-1106	5/18/98	DH 2733 leakby was lifting DH1508 relief valve
98-1189	5/29/98	DC control voltage drops to breakers due to cable lengths
98-1292	6/26/98	ABDC1 Fail to Close
98-1304	6/26/98	6/24/98 reactor trip
98-1309	6/26/98	Rad monitor spiking due to moisture intrusion
98-1325	6/28/98	EDG ventilation damper failure
98-1333	6-29-98	Inadequate PCAQR evaluation
98-1524	11/22/97	Identified hardened grease during bench testing and follow-up on PCAQR 97-1134