

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

REPORT NO. 50-244/92-12  
DOCKET NO. 50-244  
LICENSE NO. DPR-18  
LICENSEE: Rochester Gas and Electric Corporation  
49 East Avenue  
Rochester, New York 14649  
FACILITY NAME: Rochester Gas and Electric Corporation (RG&E)  
INSPECTION AT: Nuclear Engineering Services Corporate Office  
INSPECTION DATES: August 17-21, 1992

INSPECTOR: Harold I. Gregg 10/1/92  
Harold I. Gregg, Sr. Reactor Engineer,  
Systems Section, EB, DRS Date

APPROVED BY: P. K. Eapen 10/1/92  
Dr. P. K. Eapen, Chief, Systems Section,  
Engineering Branch, DRS Date

Areas Inspected: Engineering support for R. E. Ginna site activities and licensee's progress and corrective actions for NRC Service Water Inspection previously identified items.

Inspection Results: The licensee's corporate engineering staff is actively involved with all site issues. The licensee's responses and corrective actions to previously identified NRC items have shown consideration of safe plant operation. Several corporate engineering activities have shown good results and the need to address plant aging needs were viewed as proactive.



## 1.0 ENGINEERING/TECHNICAL SUPPORT OF SITE ACTIVITIES (37700)

The inspector reviewed engineering activities initiated by corporate engineering (Nuclear Engineering Services) and also those modification activities the site has requested, in support of site needs and safe plant operation.

### 1.1 Service Water Temporary Cooling Project Status

The inspector reviewed the status of the service water temporary cooling project with the responsible engineer and with corporate engineering management. This review was performed to assess the engineering performance in the preliminary stage of an important modification.

The inspector determined that several conceptual designs were developed to provide reliable and redundant temporary cooling of equipment supporting residual heat removal when the normal SW system is to be overhauled in the 1993 outage. One design concept would utilize two separate SW pumps and two temporary service water loops. The other design concept that was the selected design would utilize one temporary service water loop to cool the "B" spent fuel pool heat exchanger (SFPHX), control room chillers and screen house demands, and utilize the existing fire water system as the other loop.

The inspector verified that corporate engineering is working closely with plant engineering and operations on this extensive effort. The inspector determined that engineering needs were identified early and in-depth reviews were performed so that installation up to tie-in, can be made prior to shutdown for the outage. The inspector also noted that the safety importance of this project is recognized by the engineering organization and engineering management.

### 1.2 Additional Plant Support Modifications

The inspector reviewed several modifications that have been requested by the site related to equipment aging problems which are being addressed by Nuclear Engineering Services (NES). Each of these modifications was discussed with the responsible engineer. These modifications are briefly described below.

**Motor Repair and Refurbishment** - SW pump motor winding failures in 1990 and 1991 led to the rewinding of all four SW pump motors and the recognition that a planned motor repair program and additional sources of qualified repair facilities were needed. NES has developed a comprehensive ordering specification and is providing support to the site in developing plans to prioritize and schedule motor repairs as preventive measures.



Main Generator Exciter Voltage Regulator Replacement - Difficulty in obtaining spare parts and plant operational problems caused by the aged voltage regulator (VR) necessitated this modification that will be performed in the 1993 outage. The modification team led by NES considered alternative replacements, and obtained information of equipment performance through visits to other licensee facilities to determine the best replacement option.

Recorder Replacement - NES has the prime responsibility planning and coordinating the modification team effort to replace the existing aged and unreliable single pen recorders with new multi-pen recorders. Sources and models of recorders were evaluated and selected for this modification that will change out recorders over a two outage span.

Security Upgrade - A multi-year project that will include a new computer system, closed circuit TV system and intrusion detection system. This modification will also involve some minor lighting changes.

The inspector determined that the responsible engineer for each of the above modifications competently addressed requirements, safety implications, and plant benefits associated with the modification. The inspector verified that modification details were fully reviewed by engineering supervision and that engineering management approval has been obtained.

#### 1.4 Vendor Technical Manual Project

The inspector reviewed the licensee's technical manual activities and determined that an extensive engineering led vendor manual upgrade project was in the final stage of completion. All installed safety-related and safety significant equipment and reliability centered maintenance components were in the program scope. The program reviewed 1,200 separate equipment vendors of which 200 vendors were determined to be applicable for a vendor manual. The present status as determined by the inspector was, 163 completed manuals specific for each vendor have been released to five core areas and four shop areas of the plant. The manuals reviewed by the inspector were controlled and contain all vendor updated information, reference historical data and vendor recommended replacements of obsolete equipment. The project is to be fully completed in 1992, and station and engineering procedures to govern the new vendor manuals are in the midway status of completion. The inspector found the new vendor manual format substantially improved and viewed the results of this project to be a well performed engineering led accomplishment.

#### 1.5 Setpoint Verification Project

The inspector reviewed the licensee's setpoint verification project and determined that a comprehensive evaluation of proper instrument loop setpoints was undertaken due to a self assessment that identified a weakness in instrument and control calibration. The program reviewed by the inspector involved determination of instruments to be included, verifying proper calibration, and considerations of the instrument and test equipment uncertainties. Sixty-five instrument loops are to be done first on a contract basis, to be followed by



seventy-five redundant loops to be done by in-house staff. The inspector reviewed two volume control tank level instrument loop studies that are completed and found them to be fully detailed and large scale work efforts. The setpoint verification project was considered a well planned and safety oriented engineering activity.

## 1.6 Conclusions

The modifications to be implemented and the NES leadership and active participation in resolving plant needs demonstrated good engineering support. Engineering initiative was evident in the vendor manual and the setpoint verification projects. The modifications and other projects exhibited engineering leadership and team coordinated efforts to improve operational capabilities and plant safety. Management oversight and awareness of the need for NES to support and lead site modifications was evident.

## 2.0 REVIEW OF PREVIOUSLY IDENTIFIED ITEMS (92701, 92702, 37700)

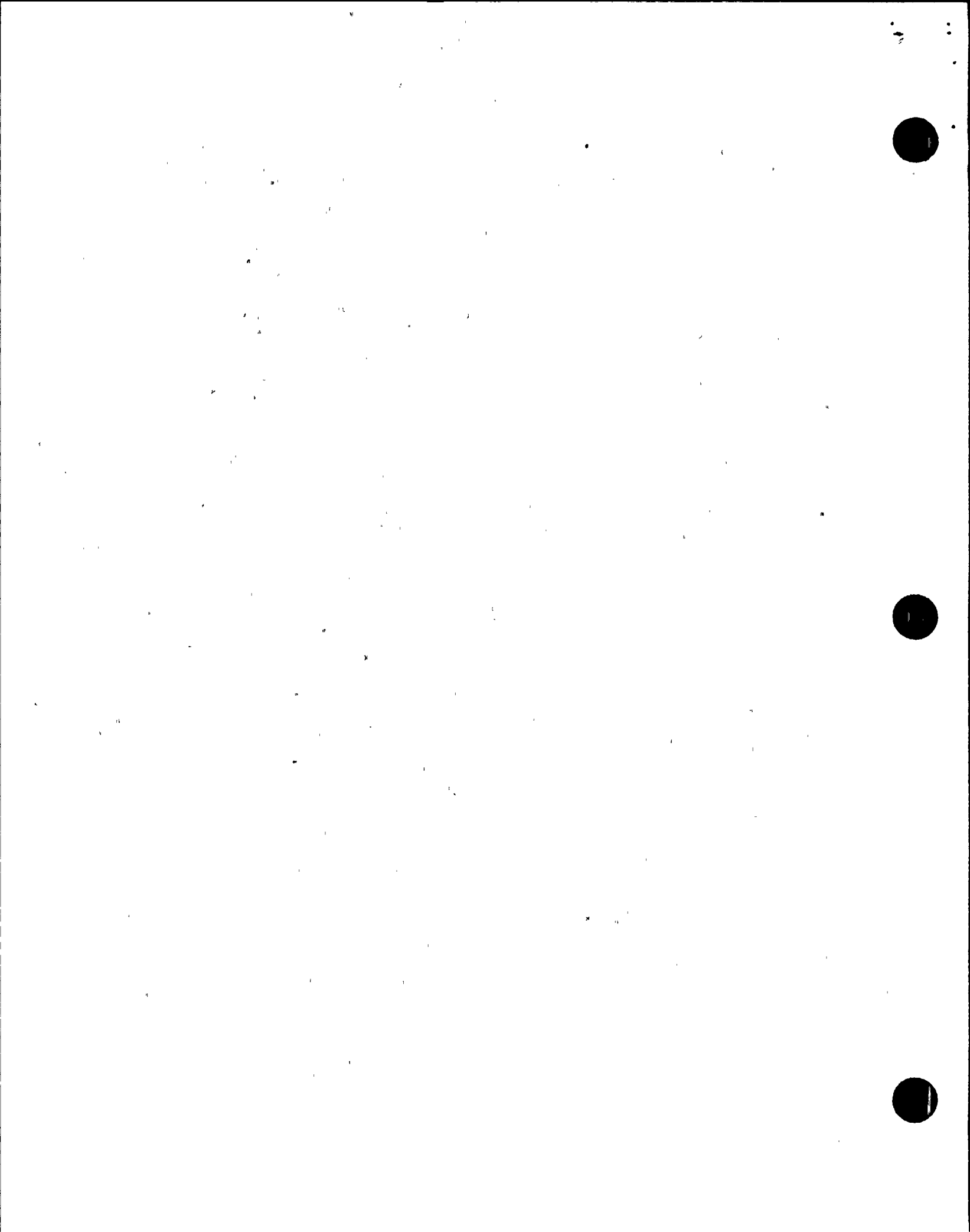
(Closed) Violation (50-244/91-201-01) Several examples of inappropriate control, verification, and acceptance of design reports, calculations or analyses of the service water system.

- (1) An NUS Corporation calculation used by the licensee was stamped preliminary and did not have the licensee's acceptance.

The inspector verified that the licensee instituted formal completion of the vendor calculation that included re-review of the calculations, followed by comments to the vendor. The inspector also verified that the revised calculations were reviewed and accepted by the licensee and that the procedural control of vendor design documents (procedure QE-704) was revised to require formal review and acceptance. Revision 3, effective May 11, 1992, incorporated these provisions and training was given to engineering personnel in the use of the new review and acceptance of design calculations.

- (2) Bechtel-KWU reports, Job No. 20031, similarly did not contain formal indication of the licensee's acceptance.

The inspector verified that the Bechtel-KWU reports were independently reviewed and were evaluated and approved by the licensee. The inspector also verified that formal acceptance and sign-off as required in the revised procedure QE-704 has been implemented.





- (3) The RG&E design analysis for "Insitu Motor Load Determinations" for EWR 4232 included incorrect assumptions that were not identified by the design verification process.

This analysis was verified to be a "study only" analysis that did not result in design output. The inspector also verified that the licensee initiated subsequent detailed analyses and the test results demonstrated the adequacy of motor size and the motor heat up characteristics.

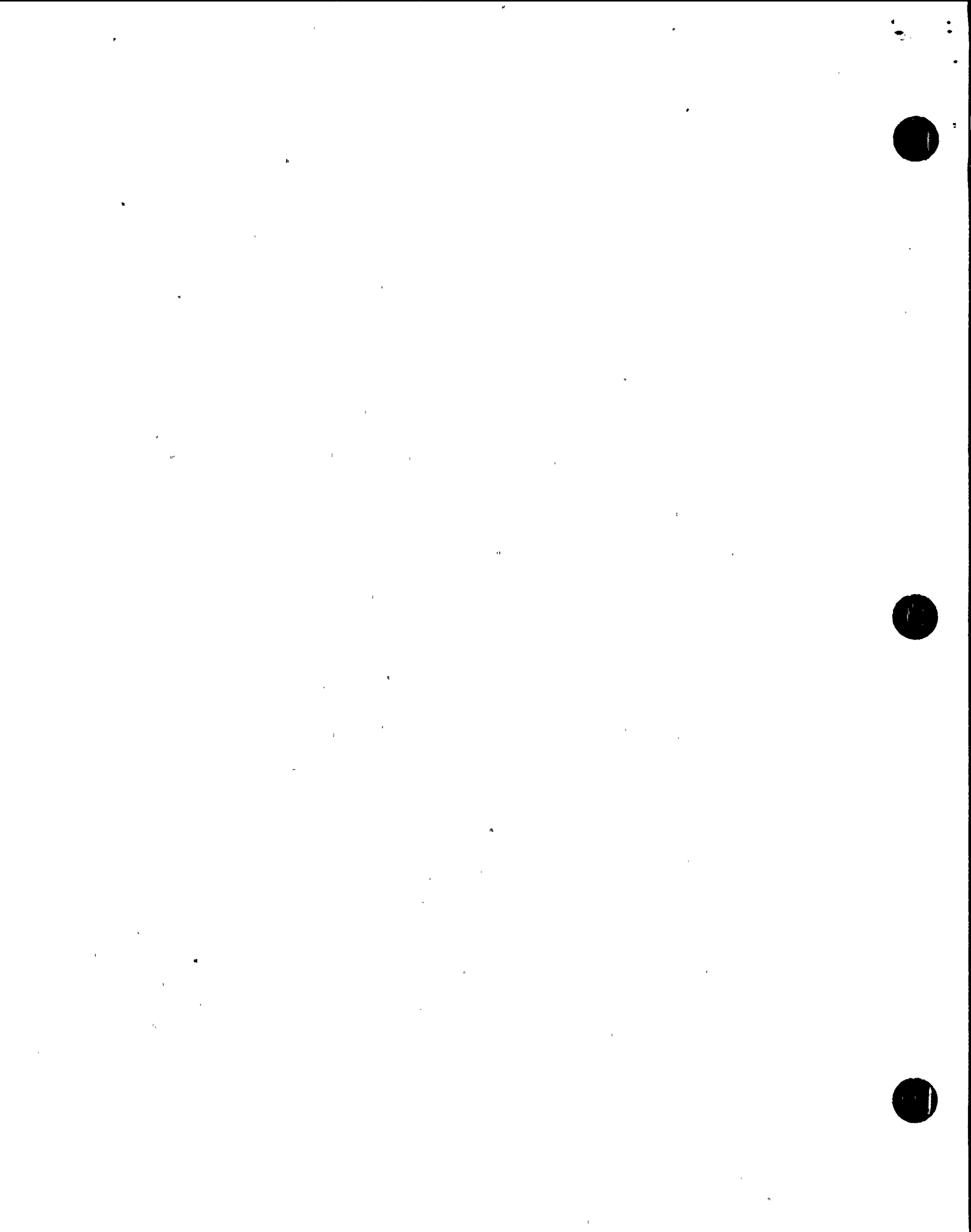
- (4) Two copies of the RG&E design analysis of Containment Fan Cooler Air Flow were provided, one of which was hand marked. The correct design analysis was the one with handwritten additions that had not been incorporated into a new revision.

The inspector verified that the design analysis was formally revised to incorporate the hand notes. The inspector also verified that Procedure 302, Revision 7, "Preparation Review and Approval of Design Analyses," requires formal review, approval and acceptance sign-off.

- (5) The licensee's analyses, "Minimum Diesel Generator Jacket Cooler and Lube Oil Cooler Service Water Flow Requirements," EWR 4658ME-009, Revision 0, utilized a 75°F inlet temperature, whereas the vendor data sheet contained an 80°F inlet temperature.

The inspector determined that the licensee's original calculations did use an assumed 80°F SW inlet temperature for investigating flow margin for the diesel generator (DG) coolers. The 75°F inlet temperature was only used to calculate the design U values for the DG coolers, and all subsequent original calculations used an 80°F SW inlet temperature.

The inspector reviewed the June 1, 1992, Appendix E, "Minimum Diesel Generator Jacket Cooler & Lube Oil Cooler Service Water Flow Requirements" (EWR 4658-ME-009), Revision 1 changes to design analysis performed by the licensee in response to this item. The Appendix E revision to the original calculations compared the impact on DG cooler design U values using the American Standard data sheet 80°F inlet vs. the Gilbert and Associate bill of material (BOM) 75°F SW inlet temperature of the original calculations. The use of the 80°F in the revised calculations resulted in a slightly higher design U value. The licensee's Appendix E conclusion was, the use of underestimating U values in the original calculations resulted in underestimated DG cooler performance, thus, the use of the BOM SW temperature was conservative. Appendix E also identified an error in the initial calculations of tube material thermal resistance which has been incorporated into the calculations and has resulted in negligible impact on the prior calculations.



The licensee's corrective actions and documented positions in the above items were considered acceptable. This item is closed.

(Closed) Unresolved Item (50-244/91-201-04) Spent fuel pool heat exchanger (SFPHX) "A", no longer classified as safety related.

The inspector reviewed the licensee's response to this item and the prior design background that implemented the service water system modification to improve the service water system and increase the spent fuel pool capacity in 1981. The November 3, 1981 NRC letter and safety evaluation for the proposed modification concluded that the proposed modification that added the "B" service water loop and the existing backup system was acceptable. This safety evaluation also described the existing systems (the "A" loop and the "C" skid mounted system) as non-seismic category 1.

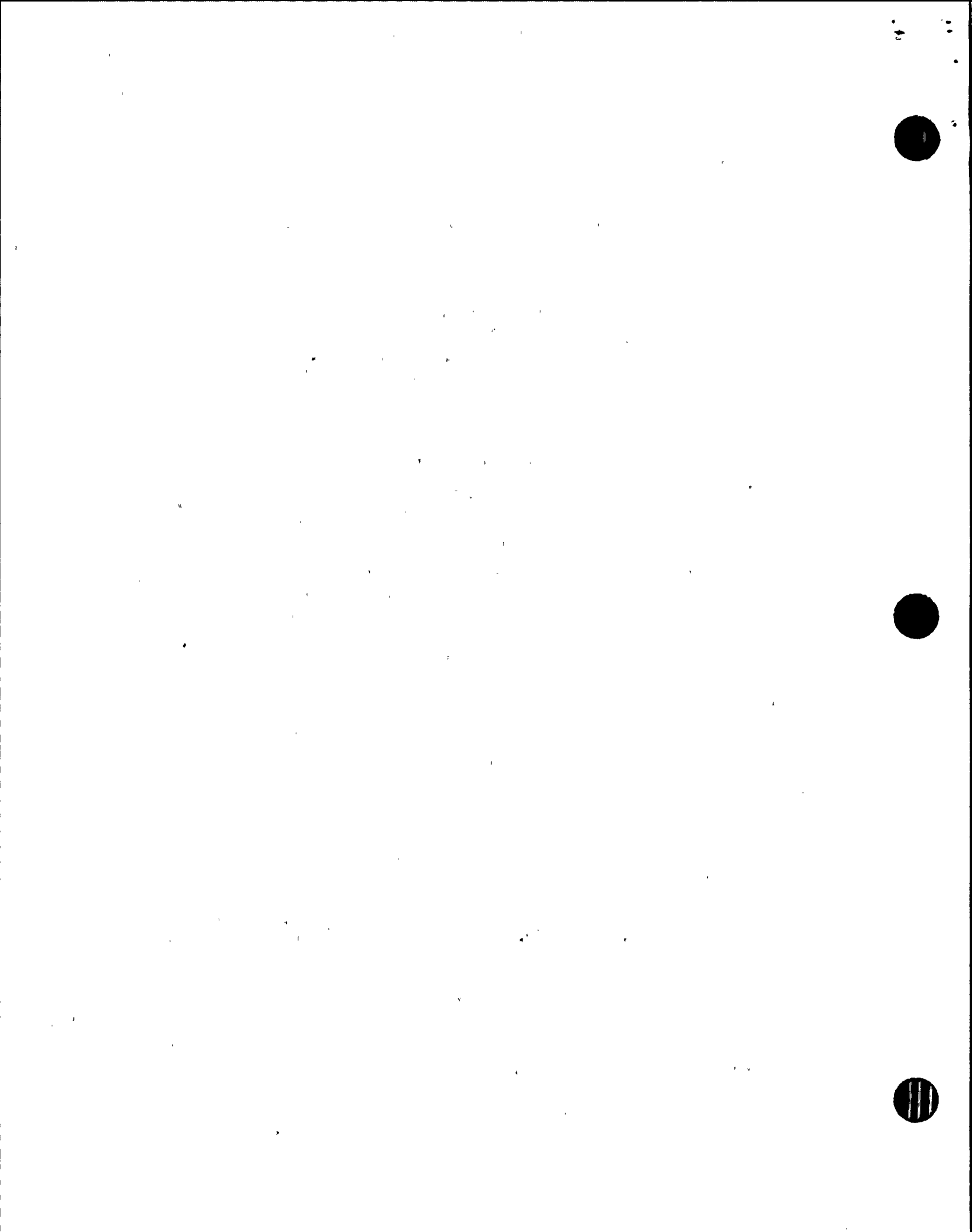
The inspector reviewed the drawings and component designations of the "A" SFPHX and noted that the service water (shell side) of the exchanger was and currently is classified as safety class 3. The licensee maintains two drawings, one depicting the shell side (Drawing 33013-1250, Revision 12) that shows the pressure boundary to be safety class and the other (Drawing 33013-1248, Revision 15) that shows the process side (tube side) which is classified as a safety significant pressure boundary. The inspector verified that the safety significant classification provides additional controls above a non-safety related category and that this classification was upgraded at the time of the 1981 modification. The note 13 shown on Drawing 33013-1248 added some confusion and the licensee is revising the general P&ID notes to clarify that the safety classification applies to the piping flow shown on the drawing.

Further review by the inspector determined that the 1981 installed "B" spent fuel pool cooling system serves as the seismic category 1 system and the "A" system serves as a backup. This item has been satisfactorily addressed by the licensee and is closed.

(Closed) Violation (50-244/91-201-11) Discrepancies in UFSAR service water system versus actual configuration.

The inspector reviewed the changes made to the UFSAR and the commitments made by the licensee to address the discrepancies identified in the violation. The inspector verified that the licensee modified UFSAR Section 9.2.1.3 to identify the cross-tie alignment and Section 9.2.1.2.2 to clarify that non-safety loads are isolated on a safety injection signal concurrent with an undervoltage condition. The inspector also verified that revisions were made to the Table 9.2-2 flow values and UFSAR Section 9.2.1.2.1 to clarify flow values.

The inspector also reviewed the licensee's 10 CFR 50.59 Safety Evaluation NSL-0000-SE012, Revision 0, for the "Change in Normal Alignment of the Containment Fan Cooler Service Water Cross-Tie Valve 4639 from Closed to Open." The inspector verified that the required evaluation considerations of safety and unreviewed safety questions were addressed.



The licensee's commitments to be completed in the 1992 annual UFSAR update include an improved UFSAR Section 9.2.1.3 description of the Service Water Configuration and a Table 9.2-2 modification. The inspector also reviewed the draft changes to Procedure A-601.8 that are intended to identify needed UFSAR changes and to prevent further violations of this type and found them to be acceptable.

The licensee's actions in resolving UFSAR changes were deemed appropriate. This item is closed, however, the issues involving the SW licensing bases including the adequacy of the licensee's Safety Evaluation NSL-0000-SE012 will be further reviewed by the NRC under the Systematic Evaluation Program, Topic IX-3.

(Closed) Violation (50-244/91-201-14) Preoperational test results of service water were not reviewed to compare current system operation and configuration to the original design basis. System operation was changed from three pumps to two and original licensing and testing did not verify flow capability of this configuration.

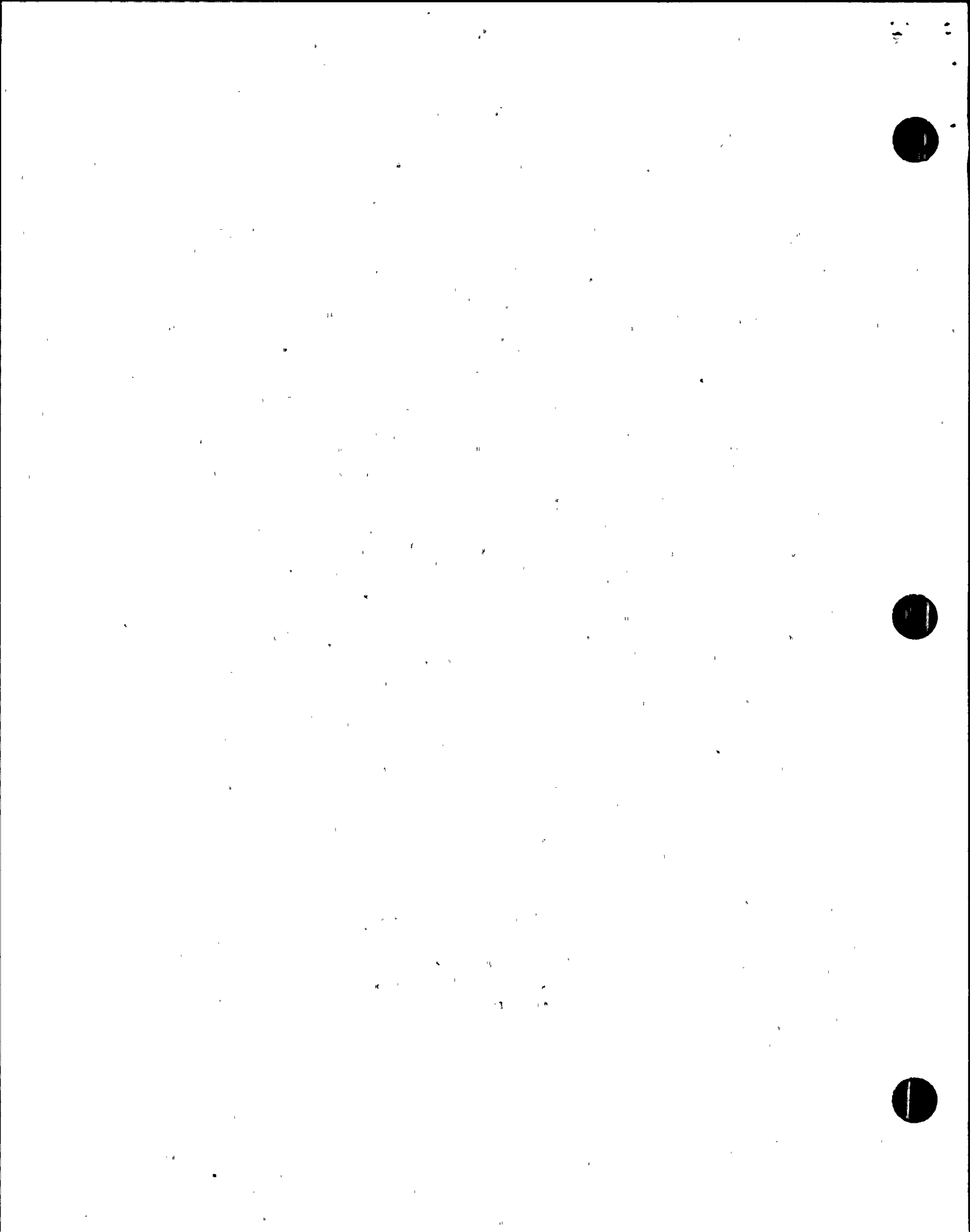
The inspector reviewed the licensee's original response that contested this violation. The NRC letter of July 21, 1992 did not accept the licensee's position because information contained in the RG&E response was based on recent analyses and was considered corrective action. The NRC letter of July 21, 1992, required no licensee response.

The inspector reviewed the licensee's December 2, 1991 Safety Evaluation for Change in Normal Alignment of the Containment Fan Cooler Service Water Cross-Tie Valve 4639 from closed to open that had relevance to the system performance concerns of the violation. The licensee has also committed to testing during the 1993 refueling outage when the service water system is refurbished, to assure optimum flow balancing of the system.

The inspector determined that the licensee's safety evaluation and the commitment of testing addressed the violation issues. This item is closed, however, the issues regarding SW system and component operability will be further reviewed by the NRC under the Systematic Evaluation Program, Topic IX-3.

(Closed) Unresolved Item (50-244/91-201-15) Performing equipment surveillance testing while taking redundant equipment out of service.

The licensee's letter of April 6, 1992, Item D, fully discussed this item and stated the "RG&E philosophy to not perform surveillance testing of equipment, while redundant equipment is out of service." Further information was provided that: a temporary waiver of compliance will be requested if this situation exists, surveillances are reviewed for impact on safety, and maintenance performed that requires entrance into a TS action statement is only performed in the interest of greater safety.



The inspector verified that the licensee's Procedure A-1101, "Performance of Tests," paragraph 3.2, contains provisions for operability of safety systems during testing. The subparagraphs 3.2.1 and 3.2.2 contain provisions that in the event that plant conditions warrant, to return the system to normal accident alignment. The procedure further notes that it is not necessary to declare the system/component inoperable on the basis of its being tested.

The licensee's response and procedural instructions were found to be acceptable. This item is closed.

### 2.1 Commitment and Action Tracking

The inspector found the licensee's program for tracking and close-out of prior identified items to be very organized and effective.

### 3.0 EXIT MEETING

The inspector met with the licensee's representatives at the conclusion of the inspection on August 21, 1992, to summarize the findings of this inspection. Attendees at the exit meeting and persons contacted during the inspection are listed in Attachment 1. Additional information to clarify and enable resolution of several inspection items was obtained during phone conversations of September 16 and 19, 1992, the licensee's letter of September 30, 1992, that provided the status of service water items, and data sent to Mr. Gregg on October 1, 1992. A conference call with the licensee's representatives on October 8, 1992, concluded this inspection.





## ATTACHMENT 1

### PERSONS CONTACTED

#### Rochester Gas and Electric Corporation

- R. Baker, Lead I&C Engineer
- \* B. Carrick, Lead Mechanical Engineer
- K. Cona, Electrical Engineer
- J. Dunne, Mechanical Engineer
- \* C. Forkell, Manager, Electrical Engineer
- L. Hubbard, Configuration Management Engineer
- \* R. Jaquin, Nuclear Services and Licensing Engineer
- \* M. Kennedy, Director, Configuration Management
- J. Kile, Nuclear Engineer
- L. Markham, Project Manager CMIS
- \* T. Newberry, Lead Mechanical Engineer
- J. Sargent, Electrical Engineer
- J. Smith, Electrical Engineer
- \* G. Travers, Nuclear Services and Licensing Commitment Tracking
- H. Van Haute, Configuration Management Engineer
- \* G. Voci, Manager, Mechanical Engineering
- P. Wilkens, Manager, Nuclear Engineering Services
- \* G. Wrobel, Manager, Nuclear Services and Licensing

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- \* H. Gregg, Sr. Reactor Engineer
- \* Denotes those present at the exit meeting.

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