

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 50-220; 50-410  
License Nos: DPR-63; NPF-69

Report Nos: 50-220/98-10; 50-410/98-10

Licensee: Niagara Mohawk Power Corporation

Facility: Nine Mile Point, Units 1&2

Location: Scriba, New York

Dates: June 15 - 19, 1998, July 6 - 7, 1998, and July 10, 1998.

Inspector: Leonard S. Cheung, Sr. Reactor Engineer

Approved By: William H. Ruland, Chief  
Electrical Engineering Branch  
Division of Reactor Safety

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## EXECUTIVE SUMMARY

### Nine Mile Point Engineering Followup Inspection Report 50-220/98-10 and 50-410/98-10

This engineering followup inspection was conducted to review licensee corrective actions for 13 previously identified engineering inspection items, including four unresolved items, six escalated enforcement items, one inspection followup item, and two violations.

#### Engineering

- ◆ The licensee's corrective actions and preventive actions for recurrence for six escalated enforcement items and two violations, were found acceptable. Also, the licensee's corrective actions for four unresolved items and one inspection followup item were found adequate. All 13 items were closed. (E8.1 through E8.12)
- ◆ The Quality Assurance (QA) audits and Independent Safety Engineering Group (ISEG) assessment were thorough and of good quality. (E8.1 and E8.3)



## Report Details

### Summary of Plant Status

This engineering followup inspection was conducted to review licensee corrective actions for previously identified engineering inspection items. Unit 1 was at full power during this inspection. Unit 2 was shutdown for refueling from May to July 1, 1998.

#### **E8 Miscellaneous Engineering Issues (92903)**

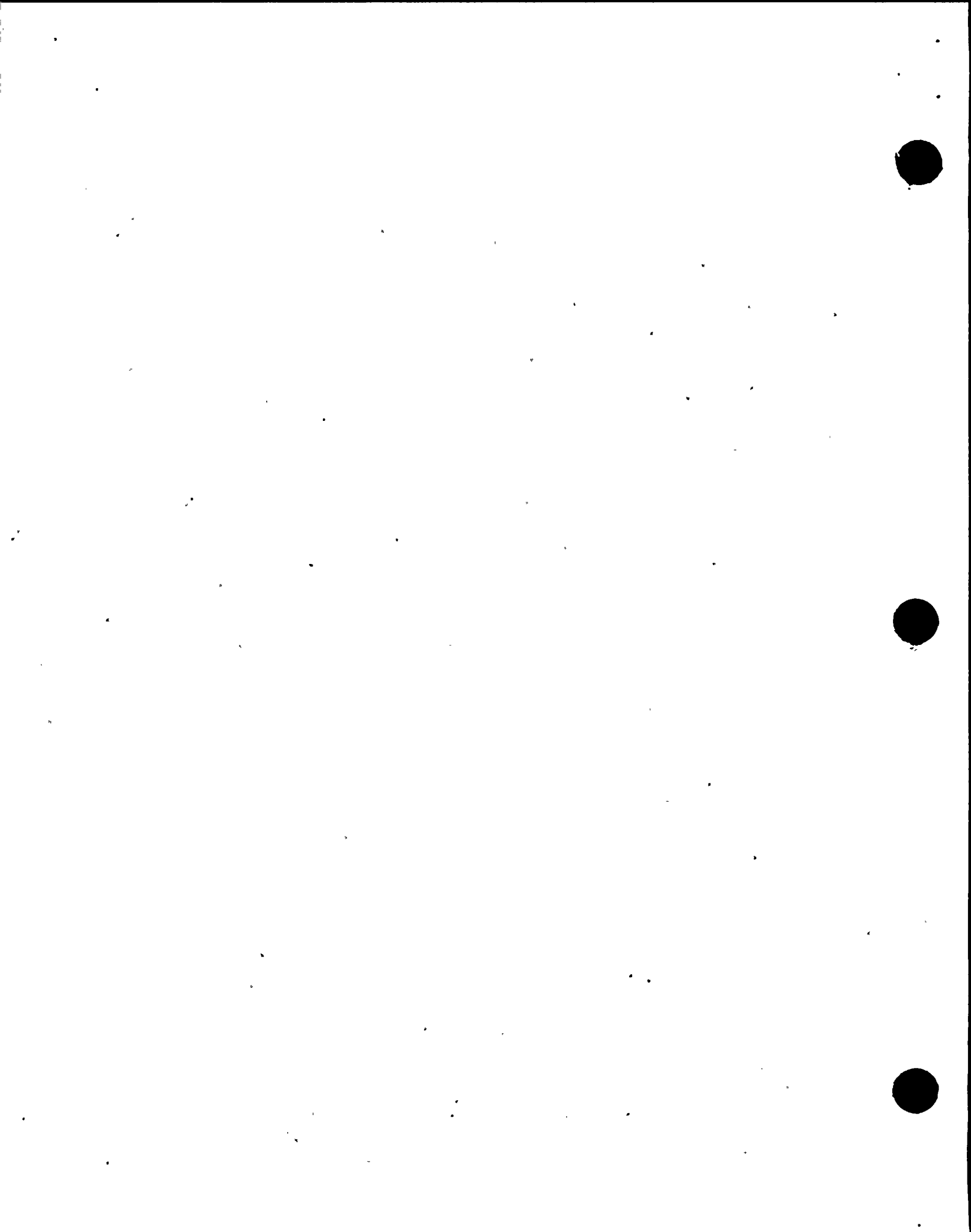
- E8.1 (Closed) Escalated Enforcement Item (50-410/EA 96-494-2013):** RCIC Turbine Lube Oil Cooler Pressure Control Valve in the Failed Open Position for Extended Period (Inadequate Corrective Actions). On January 26, 1991, the licensee placed the RCIC turbine lube oil cooler pressure control valve (2ICS\*PCV115) in the failed open position. The failed position of this valve was not corrected until September 1996. Placing the valve in the failed open position had caused the lube oil cooler and its associated piping to be operated routinely above their design pressure of 150 psig, resulting in system degradation and could have adversely affected the RCIC operability.

The inspector reviewed licensee's response letter dated May 12, 1997, to the Notice of Violation. The licensee attributed this violation to be lack of management sensitivity to the requirement to return the component to a fully qualified state in a timely manner.

In their response letter, the licensee stated that the failed pressure control valve had been permanently modified prior to startup from refueling outage 5 on November 2, 1996. The inspector reviewed Simple Design Change SC2-0077-93 package, which confirmed that 2ICS\*PCV115 had been replaced in September 1996 with an air-operated valve of different design. The licensee also stated that they had formed a Senior Management Team (SMT) to review this and other similar violations and find ways to improve the corrective action program. Corrective actions taken by the licensee to prevent recurrence were generic (also apply to other examples of corrective action violation) and broad in scope, including: 1) improving the process of the Deviation/Event Report (DER) program, 2) improving the quality of root cause analyses, and 3) reinforcing senior management's expectation on corrective actions.

During this inspection, the inspector verified the completion of several actions (such as revision of the DER procedure and staff training) that the licensee used to accomplish the above corrective actions, using the licensee's Nuclear Commitment Tracking System (NCTS). The inspector also reviewed an audit report of a large scale QA audit (Audit 97004 with 10 auditors) conducted in May 1997 to assess NMPC's corrective action program. The audit team concluded that the effectiveness and implementation of the program was marginally acceptable. The inspector found this QA audit to be comprehensive, covering broad areas of the corrective actions program.

This item is closed.



E8.2 (Closed) Escalated Enforcement Item (50-410/EA 96-494-2023): Incorrect Control Room Chiller Low Flow Trip Setpoint (Inadequate Corrective Actions). In 1992, the licensee reviewed the control room chiller condenser water low flow trip setpoint following cancellation of Modification PN2Y87MX057 (for a new I/E converter) and concluded that the new setpoint was conservative. In September 1995, the Unit 2 Division II control room chiller tripped twice due to low condenser water flow concurrent with the start of an emergency diesel generator (EDG). The evaluation of these events and the 1992 review failed to recognize that, in response to a postulated design basis accident, the EDGs are expected to start, resulting in service water pressure and flow transients; and that sufficient margin was not provided for the control room chiller condenser water low flow trip setpoint to compensate for these transients. This constituted a condition adverse to quality because the control room chillers could trip following a postulated design basis accident. As a result of the narrowly focused evaluations, the licensee failed to identify and correct this condition adverse to quality until August 1996.

The inspector reviewed licensee's response letter dated May 12, 1997, to the NRC's Notice of Violation. In this letter, the licensee attributed the cause of this violation to be narrowly focused review and failure to identify the full scope of the problem both in 1992 and 1995, and inadequate depth of evaluation by the personnel who evaluated these issues. The licensee also stated that a contributor to the condition was the lack of detailed analytical model of the service water system which made a precise determination of service water flows and pressures under transient condition difficult. For corrective actions, the licensee stated that the setpoint for the low condenser flow trip for the control room chillers was revised in August 1996, and that a detailed computer model of the service water system had been developed for use in the analysis of the service water.

During this inspection, the inspector reviewed Design Document Change 2E11175A, which indicated that the trip setpoint for flow switch 2SWP\*FSL29A/B had been changed from 250 gpm to 210 gpm on August 15 and August 16, 1996. The inspector also discussed with the engineer responsible for the service water system and confirmed the licensee's completion of the newly developed computer model (a large PC-based Program developed by Porto-Power Corporation, Groton, Connecticut) on November, 1996 (Revision 0) for the service water system for analytical use of the system.

The inspector also reviewed licensee event report (LER) 96-10, dated September 12, 1996, which reported to the NRC of the control room chiller inoperable event. In the LER, the licensee identified one of the corrective actions was to remove the trip function of the low condenser flow switch (2SWP\*FSL29A/B) but retain its alarm function (The licensee had determined at that time that this trip function was not essential, and estimated the target implementation date to be December 31, 1997). For this specific issue, the





inspector reviewed Design Document Change 2E11354, which indicated that the trip function of flow switches 2SWP\*FSL29A/B had been removed on June 21, 1997. This document also contained a technical justification for removing the trip function. The associated safety evaluation for this design change was No. 97-054. The inspector's review of these documents did not identify any concerns.

The inspector also verified licensee's completion of corrective actions to prevent recurrence (for inadequate corrective actions) as discussed in E8.1 above.

This item is closed.

- E8.3 (Closed) VIO 50-410/EA96-494-3033: Incorrectly Sized RCIC Turbine Lube Oil Cooler-Restricting Orifice (Inadequate Design Control).** Calculation No. A10.1-H-005, dated September 23, 1996, used an incorrect pressure input (165 psig) in determining the required size for the RCIC turbine lube oil cooler restricting orifice (2ICS\*RO207). The independent review and the station operation review committee review failed to identify the incorrect downstream pressure. As a result, when 2ICS\*RO207 was rebored, the result orifice size was too small (0.6 inch). With the incorrect orifice size, The RCIC turbine lube oil cooler and its associated piping could be operated at a pressure exceeding their design pressure and the relief valve could continuously lift during RCIC operation.

The inspector reviewed licensee's response letter dated May 12, 1997, in response to NRC's Notice of Violation. The licensee attributed the root cause to be a personnel error made by the individual performing the calculation, and inadequate verification of the calculation by the checker and the independent reviewer. The licensee also stated in the response letter that Calculation A.10.1-H-005 had been revised and proper orifice size determined, and that 2ICS\*RO207 had been replaced. The inspector reviewed the licensee's revised calculation, using 150 psig as the input pressure. This calculation indicated the correct orifice size to be 0.625 inch diameter. The inspector also reviewed design change N2-000-97 and work order 97-00555-00, which confirmed that the correct orifice size was implemented on April 23, 1997.

In the licensee's response letter, the licensee also stated that they had formed a Senior Management Team (SMT) to review this and other similar violations and find ways to improve the quality of engineering personnel, and establishing clear management expectations. Corrective actions taken by the licensee to prevent recurrence were generic (also apply to other examples of design control violation) and broad in scope, including: 1) establishing a Design Review Board to advise engineers on scheduled modification prior to their design being finalized for implementation, 2) increasing assessments and audits from the Independent Safety Engineering Group (ISEG) and the Quality Assurance (QA), and 3) improving the technical knowledge of engineering staffs.



During this inspection, the inspector reviewed various documents, including memos regarding the formation of the Design Review Board, engineering guidelines for the Design Review Board, and various training records, which confirmed the licensee's completion of corrective actions 1) and 3). The inspector also reviewed the audit report of a large scale QA audit (Audit No. 97011, consisting of 11 auditors) conducted in September 1997 on design control/configuration control, and a recent ISEG assessments report dated February 13, 1998, on engineering and technical support. The QA audit and ISEG assessment did not identified similar (design control) violations. The inspector found both QA audit and ISEG assessment to be thorough and of good quality.

This violation is closed.

- E8.4 (Closed) Escalated Enforcement Item (50-410/EA 96-494-3023): Invalid Calculation used As Basis for RCIC Turbine Lube Oil Cooler Operability Determination (Inadequate Design Control).** The calculation entitled "RCIC pump cooler differential pressure evaluation," dated June 15, 1992, was incorrect in that it did not include the suction pressure of the RCIC pump when calculating the downstream pressure of 2ICS\*PCV115, assuming the RCIC turbine lube oil cooler relieve valve failed to open. Also, this calculation was not reviewed by the discipline supervisor. The calculation was used as the basis for two operability determinations for the RCIC system dated June 16, 1992, and August 24, 1993. As a result of the incorrect calculation, the operability determinations incorrectly concluded that the downstream pressure would not exceed the hydrostatic test pressure of 225 psig for the piping system, if the relief valve failed to open. Consequently, the RCIC system was operated with 2ICS\*PCV115 failed open, which had the potential to exceed the safe operating pressure of the system if the relief valve failed to open.

In a letter dated May 12, 1997, in response to NRC's Notice of Violation, the licensee attributed the calculation error to be a personnel error by the engineer performing the calculation. The licensee also identified the underlying causes to be a lack of management attention and reinforcement of expectations regarding attention to detail and questioning attitude.

Following the November 1996 inspection, the licensee completed the following corrective actions:

1. A new calculation (No. A10.1-H-056), entitled, "Determine High Expected Pressure of ICS LO Cooler When RV112 Stuck Closed," dated December 3, 1996. This calculation showed that the expected pressure was 265 psig;
2. A new operability determination on November 26, 1996, entitled, "Engineering Support Analysis for ICS System Past Operation with 2ICS\*PCV115 failed.Open," and determined that the system was operable.

The inspector's review of these documents did not identified any concerns.



The inspector also verified licensee completed actions to prevent recurrence (for inadequate design control) as discussed in E8.3 above.

This item is closed.

- E8.5** (Closed) Escalated Enforcement Item (50-410/EA 96-494-3043): Setpoint Calculation for the Low Condenser Flow Trip of the Control Room Chillers Failed to Consider the Effects of Service Water Pressure and Flow Transients (Inadequate Design Control). A 1988 setpoint calculation (No. 2177-CS-SWP\*09) for the low condenser flow trip of the control room chillers had failed to consider the effects of the service water pressure and flow transients that could be expected to occur when the emergency diesel generators (EDG) started following a design basis accident. As a result, when the setpoint change was implemented in 1989, the low condenser flow trip setpoint was set excessively high. This resulted in both control room chillers being inoperable.

In a letter dated May 12, 1997, in response to NRC's Notice of Violation, the licensee attributed the cause of this violation to the engineer who performed the 1988 setpoint calculation failed to evaluate the full range of transients and that the contributing factor of this event to the lack of a detailed analytical model of transient conditions for the service water system. The licensee also stated in the response letter that a detailed computer model of the service water system had been developed for use in the analysis of the service water.

The inspector reviewed the engineering calculation CS-SWP\*09, "Setpoint Calculation for 2SWP\*FLS29A/B, Service Water for Control Building Chillers Low Flow Alarm," Revision 5, dated August 16, 1996, that provided the corrected setpoint for the low condenser trip to the control room chillers and did not identify any concerns. The inspector also discussed with the engineer responsible for the service water system and confirmed the licensee's completion of the newly developed computer model (a large PC-based Program developed by Porto-Power Corporation, Groton, Connecticut) on November, 1996 (Revision 0) for the service water system for analytical use of the system.

The inspector also verified licensee's completed actions to prevent recurrence (for inadequate design control) as discussed in E8.3 above.

This item is closed.

- E8.6** (Closed) Escalated Enforcement Item (50-410/EA 96-475-3013): Motor-Operated Valve Pressure Locking Conditions Not Adequately Evaluated (Inadequate Design Control). The licensee failed to adequately verify or check the adequacy of the design of Unit 2 motor-operated valves (MOV) 2CHS\*MOV107, 2ICS\*MOV126, 2RHS\*MOV25A, and 2RHS\*MOV25B in the high pressure core spray, reactor core isolation cooling (RCIC), and containment spray systems. Motor actuator run efficiency was utilized as a design input without verifying the validity of the application. Consequently, the functionality of the valves under design-basis pressure locking conditions was not adequately assured.



The inspector reviewed licensee's response letter dated May 12, 1997, in response to NRC's Notice of Violation. The licensee attributed the cause of this violation to be inadequate management attention and oversight. As a result, NMPC failed to monitor industry direction and adequately reviewed assumptions used in pressure locking calculations. The licensee also stated, in the response letter, that NMPC had increased its participation in the industry motor-operated valve owner group.

The four affected MOVs, which had been evaluated using run efficiency, were reevaluated using pull out efficiency. As a result of this reevaluation, the licensee issued three design changes to install bonnet vent lines (to relieve pressure locking) for the four affected MOVs. The inspector reviewed Design Change N2-96-043 which indicated that the vent line for valve 2ICS\*MOV126 was installed during the October 1996 refueling outage. The inspector also reviewed Design Changes N2-96-044 and N2-96-045 which indicated that the vent lines for valves 2HRS\*MOV25A and B and for valve 2CSH\*MOV107 were also installed during the same outage.

The inspector reviewed the attendance records for the MOV owner group meetings and confirmed that the licensee had increased its participation in the industry MOV owner group activities (to improve its staff's knowledge of industrial practices) by increasing its attendance frequency of the group's meetings (from once per year before 1995 to two or more per year since 1995).

The inspector also verified licensee's completed actions to prevent recurrence (for inadequate design control) as discussed in E8.3 above.

This item is closed.

- E8.7 (Closed) Violation (50-410/97-09-02): Use of Unapproved Procedure for EQ Program Activities.** During the August 1997 inspection (97-09), a violation involving the use of unapproved document. The acceptance test plan for the EQEDC II database was not approved for release by authorized personnel, and the acceptance test was conducted on March 30-31, 1994, using the unapproved test plan.

The inspector reviewed licensee's response letter dated February 10, 1998, to the Notice of Violation. In this letter, the licensee attributed the causes of this violation to be: 1) a personnel error in that the persons responsible for completing and supporting the test plan failed to follow a nuclear interfacing procedure (NIP-NCS-01); 2) management oversight of the development of the EQEDCII database did not assure that the development of the database was in compliance with procedures; and 3) corrective actions for previously identified problems in the Software Development Group were ineffective in identifying and correcting deficiencies in maintaining documentation.

During this inspection, the inspector verified that the affected software test plan had been properly signed off and documented. The EQ personnel successfully implemented the EQEDC II test plan.





Following this inspection finding, the licensee established a software quality assurance (SQA) group, with two dedicated engineers plus the project manager. This group's function was to ensure that software applications were developed in accordance with the station procedures, and that newly developed applications were properly documented and approved. A governing procedure, SQA-01, entitled Nuclear Software Development/Software QA Instruction, was developed by this group. This procedure provided guidance on the installation of software. The inspector's review of this procedure did not identify any concerns.

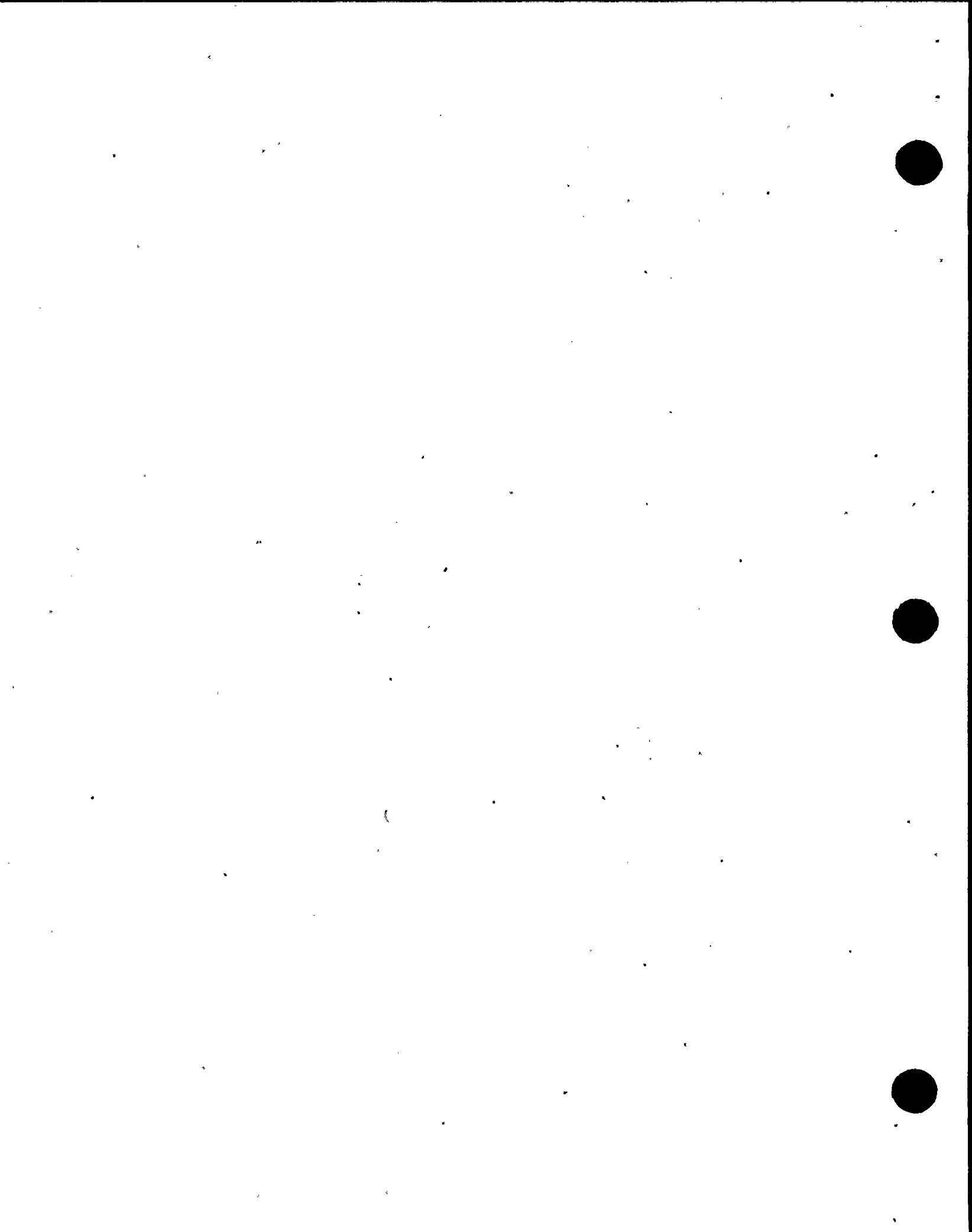
The licensee also completed a lesson learned to prevent recurrence of this violation. This lesson learned resulted in the following actions to be taken by various software departments: 1) The department that own computer software must control and maintain the configuration of the software and associated documentation to ensure similar violation would not occur; 2) The SQA group must perform random audit of computer software and associated documentation to ensure they are adequately controlled; and 3) All departments must follow department procedures and instructions. The inspector's review of this lesson-learned found that it contained very useful instruction to prevent recurrence of the violation.

To fulfill item 2) of the above, at the time of this inspection, the SQA group just completed an audit (report not yet written) in which 259 software releases (all but three were used to support nonsafety-related functions) were examined. Discussion with the lead auditor indicated that no violations (for software supporting safety-related functions) were identified. However, this SQA audit identified other weaknesses in software releases supporting nonsafety-related functions. The SQA manager stated that these audit findings would be forwarded to individual departments for resolution when the audit report was issued.

The inspector considered licensee's corrective actions and actions to prevent recurrence to be acceptable. This violations is closed.

- E8.8** (Closed) Violation (50-410/97-09-03): No Written Instructions or Procedures for EQ Program Activities. During the August 1997 inspection (97-09), a violation involving two examples of no written instructions or procedures for environmental qualification (EQ) program activities were identified. The first example involved with the calculations of mechanical equipment qualified lives, that were used for Unit 2 power uprate. These calculations were not prescribed and accomplished with documented instructions.

The second example involved with the use of EQEDC (Environmental Qualification Environmental Design Criteria) and EQEDC II databases. The restriction claimed by the licensee that these databases were only used for Unit 2 power uprate was not prescribed in documented instructions or procedures.



In the response letter (dated February 10, 1998) to the Notice of Violation, the licensee attributed the cause of this violation to be inadequate procedure review during the EQ procedure development, and that the governing EQ procedure, NEP-DES-25 entitled "Environmental Qualification Program", did not provide sufficient prescriptive direction.

During this inspection, the inspector reviewed DER 2-97-2691 dated September 12, 1997, which was issued to document the EQ deficiencies identified in the violation, and to track their resolutions. The inspector also reviewed an evaluation, entitled "Evaluation of EQ Impact of Niagra Mohawk Power Company Unit 2 Power Uprate per NEP-DES-02," dated May 29, 1998. The evaluation results showed that generally the qualification status of the equipment involved with Unit 2 power uprate was not affected. However, there were about 15 original Stone and Webster calculations that were used to establish EQ equipment qualify life need to be revised. The inspector verified with the licensee that no immediate qualified life expiration was involved, and that these required calculations were in the EQAI (EQ Action Item) 302 list, which also included nine other items that need to be resolved. The licensee stated that all items in EQAI 302 would be completed by December 31, 1998. The licensee also revised DER 2-97-2691 on June 24, 1998, to track the completion of EQAI 302 (December 31, 1998).

During this inspection, the licensee told the inspector that they had initiated an "EQ Get Well Plan" scheduled to be completed by December 31, 1998. Discussion with the licensee revealed that this plan included actions such as: 1) the development of additional EQ design standards and EQ program procedures to provide better control of EQ activities; 2) provision of training sessions to EQ staffs to improve the staff's proficiency; and 3) the completion of EQAI 302. Completion of these items was being tracked by DER C-97-2706, dated September 16, 1997.

During this inspection, the inspector verified that Nuclear Engineering Procedure NEP-DES-25 had been revised (Revision 1 dated December 3, 1997) to:

- ◆ Require (in paragraph 3.1.3) any EQ evaluations to conform to the requirement of NEP-DES-02, "Evaluation and Analysis" and/or NEP-DES-08, "Calculations". These procedures require calculations and analysis to comply with 10CFR50, Appendix B Criteria.
- ◆ Limit the use of the EQEDC II database to Unit 2 power uprate components until data validation was documented and retained in the file for each new application (paragraph 3.2.2).

The inspector determined that a large volume of licensee's corrective actions for the resolution of this violation had not yet been completed. However, because the incomplete items were being tracked by licensee's DER system, and that the licensee agreed to complete all these items by December 31, 1998, the inspector considered this violation closed.



- E8.9 (Closed) Unresolved Item (50-410/96-16-12):** Tested Result of RCIC Turbine Lube Oil Cooler Pressure Control Valve Differed Significantly with Calculated Result. During the October 1996 inspection, while reviewing the results of the performance test that was conducted on October 30, 1996, for the flow characteristic of the RCIC turbine lube oil cooler pressure control valve (2ISC\*PCV115), the inspector observed that the actual valve coefficient ( $C_v = 1.82$ ) was much higher than designed ( $C_v = 1.4$ ). The test results showed that, with the valve in the failed open position, the measured flow through this valve (also the RCIC turbine lube oil cooler) was 61.1 gpm, when the RCIC pump discharge pressure was 1275 psig and the pressure downstream of the pressure control valve was 152 psig. The normal design flow through the cooler as specified by the vendor was 16 - 25 gpm.

Following the inspection, the licensee issued deviation/event report DER 2-96-3415 for this issue. The licensee completed an evaluation which showed that (page 3 of the DER) the higher than designed  $C_v$  would not cause operability concerns of the lube oil cooler (possible over cooling issue). The evaluation also showed that even with 61 gpm lube oil cooler flow (when the pressure control valve was in the failed open position), the developed head (3075 feet) of the RCIC pump would still be able to provide the designed injection flow of 600 gpm to the reactor vessel.

To correct the high  $C_v$  problem, the licensee installed a travel stop in March 1998 using design document change DDC 2-11293. The installed travel stop limits the maximum flow of the valve to a  $C_v$  equivalent of 1.2.

The inspector determined that the licensee had adequately addressed this issue. The higher than designed  $C_v$  had been corrected (by installing a travel stop) and did not cause operability concerns of the lube oil cooler (possible over cooling issue) or insufficient RCIC flow. However, this condition (incorrect  $C_v$ ) constitutes a design control violation (10 CFR 50, Appendix B, Criterion III) of minor significance and is not subject to formal enforcement action. This item is closed.

- E8.10 (Closed) Unresolved Items (50-410/96-16-09 and 50-410/96-16-11):** RCIC Turbine Lube Oil Cooler Restricting Orifice Incorrectly Sized and Implemented, Operability Determination Required. These two items dealt with the same topic. The first item was to ensure that the incorrectly sized orifice that had been installed was corrected and implemented. The second item was to ensure that an operability determination was performed by the licensee for the implementation of the incorrectly sized orifice.

During the implementation of simple design change SC2-0077-93 in 1996 for replacing the RCIC turbine lube oil cooler pressure control valve (2ICS\*PCV115), the licensee also rebored the restricting orifice (2ICS\*R0207) downstream of the RCIC turbine lube oil cooler to increase the orifice size to 0.6 inch in diameter. The purpose of this orifice size increase was to ensure that with control valve 2ICS\*PCV115 in the failed-open position (when nonsafety-related instrument air is not available), the downstream relief valve (2ICS\*RV112) should not open. The new orifice size was based on the result of a calculation (No. A10.1-H-005) dated September 23, 1996. In this calculation, the licensee incorrectly used a valve



(2ICS\*PCV115) downstream pressure of 165 psig, which resulted in an incorrect orifice size (0.6 inch) being implemented. The design pressure of the RCIC lube oil cooler and its associated piping was 150 psig. Therefore, this pressure should have been used as the maximum downstream pressure. The licensee was required to perform an operability determination of the RCIC system for potentially operate the RCIC turbine lube oil cooler and its associated piping above the design pressure.

The licensee later recalculated the orifice size using correct input pressure, and determined the correct size to be 0.625 inch. The correct orifice size was implemented using design change N2-000-97 and work order 97-00555-00 on April 23, 1997.

During this inspection, the inspector reviewed a Niagra Mohawk Power Corporation (NMPC) memo (from R. Deuvall to J. Conway) dated November 1996, which contained the operability determination. The inspector found that this operability determination contained sufficient bases to conclude that the RCIC lube oil cooler and its associated piping could operate safely at pressure up to 165 psig. Therefore, no additional violations were involved. The incorrectly sized orifice had already been cited as a design control violation (EA96-494-3033).

These two items are closed.

- E8.11 (Closed) Unresolved Item (50-220/97-09-04): Evaluation of Feedwater Isolation Valve Thrust Requirements.** During the August 1997 inspection, the inspector reviewed two licensee documents for the feedwater isolation valve (Rockwell Equiwedge) thrust. One was a calculation by the licensee using a valve factor of 0.47, and the other was an analysis by an independent engineering firm (MPR Associates, Alexandria, Virginia) hired by the licensee to calculate the required thrust using EPRI Performance Prediction Model (PPM). The preliminary result from the MPR analysis indicated a required thrust substantially higher than that calculated by the licensee. The inspector recognized that Rockwell Equiwedge valves were not specifically modeled in the PPM, and that the MPR calculation might be overly conservative. The inspector also estimated that there would be no operability concerns.

During this inspection, the inspector reviewed an operability evaluation by MPR Associates. This evaluation (Cal #085-305-TW1, entitled "Operability Evaluation for NMP-1 MOVs 37-07 and -08," dated May 8, 1998) showed that these valves were operable and that there were still positive margins for operations. However, the margins were not as conservative as needed (administratively) by the NMPC MOV program. The licensee had planned for next refueling outage to increase the actuator capacities to provide the recommended margins.

The inspector also reviewed a DER (1-97-0663) dated March 10, 1997. This DER also documented similar conditions for these two MOVs. The licensee revised this DER on July 7, 1998, to provide a more specific disposition, requiring the actuators of these two MOVs to be modified, by the end of next refueling outage in spring 1999, to provide sufficient margins for the maximum predicted thrust.





The inspector concluded that the licensee had appropriately addressed this issue and had provided adequate tracking for the completion of the corrective actions. The inspector determined that no violation was involved because the licensee's operability evaluation determined that the valves were operable with positive margin for operation. This item is closed.

**E8.12 (Closed) Inspection Followup Item (50-410/97-09-06): Valve Factor Justification.**

During the August 1997 inspection of licensee's MOV program, the inspectors noted that little progress had been made in further supporting the valve factor assumptions for group V03, V06, or GLO3a either through obtaining more data from industry sources or using EPRI PPM. During that inspection, the licensee committed in a letter dated September 30, 1997, to obtain additional data or perform analyses for the valves in these groups by January 30, 1998, and notify the NRC upon completion. This item was opened to track licensee's commitment.

During this inspection, the inspector reviewed a licensee letter (NMP1L 1294) dated February 27, 1998, to the NRC. In this letter, the licensee stated that analyses using EPRI PPM were performed for groups V03 and GLO3a valves; and that EPRI PPM could not be used for the two valves in group V06 because of lack of edge treatments on the valve discs.

The inspector also reviewed two analyses (MPR Reports 1866 part 1 for valve 2ICS\*MOV 126 and part 2 for valve 2ICS\*MOV 124). These analyses showed that the actuators for these valves need to be modified to accommodate the increase valve factors. The licensee stated that the modification would be completed by the next refueling outage in early 2000. The licensee also confirmed this by providing the inspector with a copy of their Nuclear Commitment Tracking System item (NM NCTS) 1L1294.

During the refueling outage in June 1998, the licensee completed a modification for the two MOVs in Group V06 involving: 1) performed edge treatments for both valves (Configuration Change No. 2M11332, completed July 4, 1998), and 2) changed a gear set for valve 2ICS\*MOV 128 (Design Change Notice (DCN) N2-97-070, completed June 28, 1998), the gear set for the other valve was changed during the previous outage.

The inspector determined that the licensee had appropriately address this issue. This item is closed.

**X1 Exit Meeting Summary**

The inspector met with the licensee personnel at the conclusion of the first site inspection on June 19, 1998, and the second site inspection on July 7, 1998, and summarized the scope of the inspection and the inspection results. No proprietary materials were reviewed during this inspection. The licensee acknowledged the inspection findings at those meetings.



The inspector also amended the exit meeting in two telephone calls on June 26, 1998, to Mr. G. Gresock, and on July 10 to Mr. T. Page. The inspector stated that after additional NRC review of licensee supplied documents, three additional items (two violations and an unresolved item) were closed as discussed in sections E8.9, E8.10 and E8.11.



PARTIAL LIST OF PERSONS CONTACTED

Licensee

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A. DeGracia, Manger, WC/OMC, Unit 1  
R. Dean, Engineering Manager - Unit 2  
J. Doherty, System Engineering  
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W. Yaeger, Engineering Manager - Unit 1

NRC

B. Norris, Senior Resident Inspector

\*Denotes personnel present at the second site exit meeting on July 7, 1998. The remaining personnel were present at the first site exit meeting on June 19, 1998.



## INSPECTION PROCEDURE USED

IP 92903 Followup - Engineering

### ITEM OPENED, CLOSED, AND DISCUSSED

#### Closed

50-410/96-16-12	URI	RCIC turbine lube oil cooler PCV flow coefficient
50-410/96-16-09	URI	Installation of correctly sized RCIC turbine LOC RO
50-410/96-16-11	URI	Operability determination for the installation of incorrectly sized RCIC turbine LOC RO
50-220/97-09-04	URI	Evaluation of Feedwater Isolation Valve thrust requirements
50-410/EA-96-494-2013	EEI	RCIC turbine LOC PCV in failed position
50-410/EA-96-494-2023	EEI	Incorrect control room chiller low flow trip setpoint
50-410/EA-96-494-3033	EEI	Incorrectly sized RCIC turbine LOC RO
50-410/EA-96-494-3023	EEI	Invalid operability determination for RCIC turbine LOC
50-410/EA-96-494-3043	EEI	Setpoint calculation for control room chiller low flow trip setpoint
50-410/EA-96-475-3013	EEI	Motor-Operated Valve Pressure Locking Conditions Not Adequately Evaluated
50-410/97-09-03	VIO	No written instruction for EQ program activities
50-410/97-09-02	VIO	Use of unapproved procedure for EQ program activities
50-410/97-09-06	IFI	Valve factor justifications





## LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DER	Deviation/Event Report
EA	Enforcement Action
EDG	Emergency Diesel Generator
EEI	Escalated Enforcement Item
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
EQAI	Environmental Qualification Action Item
EQEDC	Environmental Qualification Environmental Design Criteria
FSAR	Final Safety Analysis Report
GPM	Gallons Per Minute
I/E	Current to Voltage
ISEG	Independent Safety Engineering Group
LER	Licensee Event Report
LOC	Lube Oil Cooler
NCTS	Nuclear Commitment Tracking System
NMPC	Niagra Mohawk Power Corporation
NRC	Nuclear Regulatory Commission
PCV	Pressure Control Valve
PPM	Performance Prediction Model
PSIG	Pounds Per Square Inch Gauge
QA	Quality Assurance
RCIC	Reactor Core Isolation Cooling
RO	Restricting Orifice
SQA	Software Quality Assurance

