

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket/Report Nos.: 50-220/99-03  
50-410/99-03

License Nos.: DPR-63  
NPF-69

Licensee: Niagara Mohawk Power Corporation  
P. O. Box 63  
Lycoming, NY 13093

Facility: Nine Mile Point, Units 1 and 2

Location: Scriba, New York

Dates: February 14, 1999 - March 27, 1999

Inspectors: G. K. Hunegs, Senior Resident Inspector  
R. A. Fernandes, Resident Inspector  
R. A. Skokowski, Resident Inspector

Approved by: G. Scott Barber, Acting Chief  
Projects Branch 1  
Division of Reactor Projects



## EXECUTIVE SUMMARY

Nine Mile Point Units 1 and 2  
50-220/99-03 & 50-410/99-03  
February 14, 1999 - March 27, 1999

This inspection report includes aspects of licensee operations, engineering, maintenance, and plant support. The report covered a six-week period of resident inspection.

### Operations

On February 17, a technical specification required shutdown was initiated at Nine Mile Point Unit 1 due to the emergency cooling system being declared inoperable. Operator actions associated with the shutdown were well controlled and deliberate. The shutdown was terminated when the Nuclear Regulatory Commission (NRC) granted enforcement discretion. (Section O1.2)

On February 24, at Unit 1, both high pressure coolant injection systems became inoperable due to the potential to divert flow through a failed feedwater booster pump check valve. Therefore, the plant entered a 1 hour shutdown limiting condition for operation. To exit the limiting condition for operation, operators started the associated feedwater booster pump; however, the pump and motor were still rotating in the reverse direction when the pump was started. The action to start the pump while it was rotating in the reverse direction was imprudent. Additionally, engineering support was not involved in the decision. As a result, additional guidance had to be provided to the operators. (Section O1.3)

NRC inspectors observed that Unit 2 auxiliary operators demonstrated a good questioning attitude while performing their watchstanding duties. (Section O4.1)

### Maintenance

On March 4, the required technical specification surveillance tests for the recirculation flow upscale rod block were not completed at Nine Mile Point Unit 2. This missed surveillance requirement was due to an inadequate review during the development of the applicable instrumentation test procedure. This licensee-identified and corrected technical specification non-compliance is being treated as a Non-Cited Violation (NCV). (NCV 50-410/99-03-01) (Section M1.2)

NMPC's use of risk assessment during the work planning and scheduling processes indicated a good safety focus. Specifically, the insights gained from core damage frequency calculations at Unit 2, and from task-specific probabilistic risk assessments at both units were used by NMPC to minimize risk due to planned maintenance activities. (Section M1.3)

During routine observations of maintenance activities, performance deficiencies with work planning, scheduling and preparation of work packages continue to be noted. For example, at Unit 1, while one emergency diesel generator was inoperable for planned maintenance, Cardox testing in the other emergency diesel generator room was performed that caused both emergency diesel generators to be declared inoperable. At Unit 2, the calibration of a feedwater



## Executive Summary (cont'd)

temperature element caused an unexpected increase in indicated reactor core power. (Section M1.4)

### Engineering

On February 17, NMPC identified that the pre-service examinations for emergency condenser welds at Unit 1 were not completed and therefore, the technical specification surveillance requirements were not satisfied. NMPC interpreted the Code and erroneously concluded that the pre-hydrostatic examination met the Code requirements. Due to the improper application of the pre-service examination requirements of American Society of Mechanical Engineers (ASME) Section XI, technical specification surveillance requirements for the in-service inspection and testing were not satisfied. The NMPC requested, and was subsequently granted, enforcement discretion from the NRC because this action involved minimal or no safety impact and had no adverse radiological impact on public health and safety. This licensee identified and corrected non-compliance is a Non-Cited Violation. (NCV 50-220/99-03-03) (Section E1.1)

On March 5, NMPC determined that the weld inspections required by the boiling water reactor and internals project (BWRVIP) were not completed at Unit 1 for two vertical welds located in the lower core shroud. NMPC provided a timely and thorough assessment of the missed weld inspection and determined that the core shroud structural integrity would not be affected by the missed inspection. The failure to complete the core shroud weld inspections for the two vertical welds is a violation of NRC requirements. (NCV 50-220/99-03-04) (Section E1.2)

On February 12, NMPC identified that Unit 2 service water bay unit coolers credited in the Updated Final Safety Analysis Report to be available during a control room fire and evacuation were routinely taken out of service without recognizing the impact on safe shutdown capability. The identification of this concern indicated a good questioning attitude. Nonetheless, the failure to ensure safe shutdown capability is a violation of the NMPC's license requirement regarding the fire protection program. This licensee identified and corrected non-compliance is a Non-Cited Violation. (NCV 50-410/99-03-05). Furthermore, the corrective actions for a previous Licensee Event Report and deviation/event report were inadequate in that the actions were narrowly focused which contributed to the delayed identification of the concern with the service water bay unit coolers. This licensee identified and corrected non-compliance is a Non-Cited Violation. (NCV 50-410/99-03-06). (Section E1.3)

### Plant Support

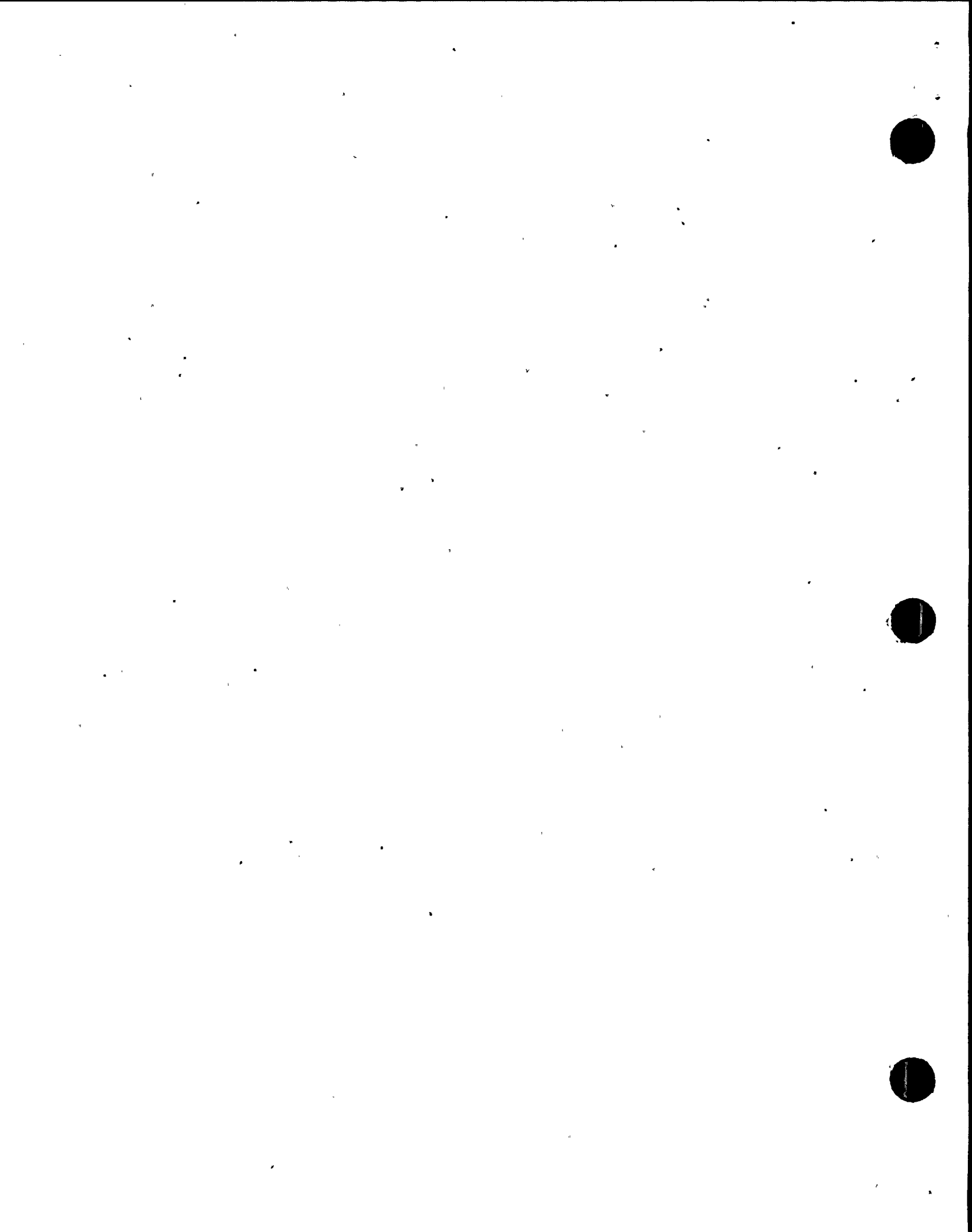
A site emergency preparedness exercise which was conducted on February 25, demonstrated acceptable performance by emergency response personnel. The post exercise drill critique provided good insight into performance and constructive criticism. (Section P4.1)

The NRC identified that copies of the pre-fire plans for the refuel floor were not changed to reflect NMPC commitments made for an exemption to 10CFR70.24, "Criticality Accident Requirements." The cause was attributed, in part, to poor administrative control and supervision



Executive Summary (cont'd)

processes for ensuring that fire protection procedures are updated. (NCV 50-220-99-03-07)  
(Section F3.1)





## TABLE OF CONTENTS

	page
EXECUTIVE SUMMARY .....	ii
TABLE OF CONTENTS .....	v
Summary of Plant Status .....	1
I. Operations .....	1
O1 Conduct of Operations .....	1
O1.1 General Comments .....	1
O1.2 Initiation of Shutdown Due to Inoperable Emergency Condensers (Unit 1) .....	1
O1.3 Feedwater Booster Pump Discharge Check Valve Failure (Unit 1) .....	2
O4 Operator Knowledge and Performance .....	3
O4.1 Observations of Operator Rounds .....	3
O8 Miscellaneous Operations Issues .....	4
O8.1 (Closed) LER 50-410/98-28 Supplement 1 .....	4
II. Maintenance .....	4
M1 Conduct of Maintenance .....	4
M1.1 General Comments .....	4
M1.2 Missed Technical Specification Required Channel Functional Test of the Recirculation Flow Upscale Rod Block (Unit 2) .....	5
M1.3 Risk Assessment during the Work Planning and Scheduling Processes .....	6
M1.4 Review of Work Planning, Scheduling and Preparation of Work Packages .....	7
M8 Miscellaneous Operations Issues .....	8
M8.1 (Closed) LER 50-410/98-24 .....	8
III. Engineering .....	9
E1. Conduct of Engineering .....	9
E1.1 (Closed) LER 50-220/99-02, ASME Code Pre-Service Examinations Not Performed on Emergency Condensers (Unit 1) .....	9
E1.2 Required Reactor Vessel Core Shroud Weld Inspections Not Completed (Unit 1) .....	10
E1.3 (Closed) LER 50-410/99-01: NMP2 Outside the Design Basis Due to Safe Shutdown Service Water Pump Bay Unit Coolers Being Out-of-Service .....	11
IV. Plant Support .....	14
R8 Miscellaneous RP&C Activities .....	14
R8.1 (Closed) VIO 50-220/97-12-09 .....	14
P4 Staff Knowledge and Performance in EP .....	14



Table of Contents (cont'd)

	P4.1	Emergency Preparedness Drill .....	14
F3		Fire Protection Procedures and Documentation .....	15
	F3.1	(Closed) LER 50-220/99-01: Outside Design Basis Due to Failure to Revise Satellite Pre-Fire Plans (Unit 1) .....	15
	V.	Management Meetings .....	16
	X1	Exit Meeting Summary .....	16

**ATTACHMENTS**

- Attachment 1 - Partial List of NMPC Persons Contacted  
- Inspection Procedures Used  
- Items Opened, Closed, and Updated  
- List of Acronyms Used



## Report Details

### Summary of Plant Status

During the inspection period, Nine Mile Point Unit 1 (Unit 1) initiated two technical specification required shutdowns. On February 17, 1999, the emergency condensers were declared inoperable because of missed weld examinations. A technical specification shutdown was begun and power was reduced to 95 percent prior to the Nuclear Regulatory Commission (NRC) granting enforcement discretion. On February 26, 1999, both high pressure coolant injection (HPCI) systems were declared inoperable due to system degradation. A technical specification shutdown was begun and power was reduced to 95 percent. On March 23, the technical specification thermal limit associated with the average planar linear heat generation rate (APLHGR) was exceeded and reactor power was lowered to 95 percent. Thermal limits were restored within the required range and a licensee analysis showed no immediate safety concern. This issue will be addressed in a subsequent NRC inspection report. The unit was returned to 100 percent and remained there throughout the end of the inspection period.

Nine Mile Point Unit 2 (Unit 2) operated at 100 percent with the exception of routine scheduled power reductions and two power reductions to approximately 55 percent which were conducted for feedwater system maintenance.

### I. Operations

#### **O1 Conduct of Operations<sup>1</sup>**

##### **O1.1 General Comments (71707)**

Using NRC Inspection Procedure 71707, the resident inspectors conducted frequent reviews of ongoing plant operations. The reviews included tours of accessible areas of both units, verification of engineered safeguards features (ESF) system operability, verification of adequate control room and shift staffing, verification that the units were operated in conformance with Technical Specifications (TSs), and verification that logs and records accurately identified equipment status or deficiencies. In general, the conduct of operations was professional and safety-conscious.

##### **O1.2 Initiation of Shutdown Due to Inoperable Emergency Condensers (Unit 1)**

###### **a. Inspection Scope (71707)**

On February 17, 1999, Unit 1 entered TS limiting condition for operation (LCO) 3.1.3.e, "Emergency Cooling System," which required that a shutdown be initiated within one hour and that the reactor be in cold shutdown within ten hours, due to all four emergency condensers (ECs) being inoperable as a result of missed weld inspections. The inspector reviewed the technical specifications and observed operator actions taken to implement TS requirements.

---

<sup>1</sup> Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized reactor inspection report outline. Individual reports are not expected to address all outline topics. The NRC inspection manual procedure or temporary instruction that was used as inspection guidance is listed for each applicable report section.



b. Observations and Findings

The emergency cooling system (ECS) is as a standby system that provides decay heat removal after a reactor scram when the main condenser is not available or in the event of a loss of reactor feedwater. The ECS consists of two independent loops, each with two emergency condensers. The system initiation is automatic and operates by natural circulation.

The emergency condensers were declared inoperable at 5:50 p.m. on February 17, because pre-service weld examinations were not complete, and operators initiated a plant shutdown at 6:40 p.m. Appropriate shift briefs for a plant shutdown were conducted and power was reduced to 95 percent in anticipation of a plant shutdown. The inspectors observed proper use of procedures and appropriate command and control during the plant shutdown. The Niagara Mohawk Power Corporation (NMPC) provided sufficient justification to the NRC for enforcement discretion which was granted at 8:26 p.m. (See Section E.1.1). The shutdown was terminated and the unit was returned to 100 percent power.

c. Conclusions

On February 17, a technical specification required shutdown was initiated at Nine Mile Point Unit 1 due to the emergency cooling system being declared inoperable. Operator actions associated with the shutdown were well controlled and deliberate. The shutdown was terminated when the Nuclear Regulatory Commission (NRC) granted enforcement discretion.

01.3 Feedwater Booster Pump Discharge Check Valve Failure (Unit 1)

a. Inspection Scope (71707)

The inspectors reviewed operator actions, including implementation of TS, associated with the number 12 feedwater booster pump (FWBP) discharge check valve failure. Additionally, the inspectors reviewed NMPC's risk assessment associated with the resulting plant configuration.

b. Observations and Findings

On February 24, upon securing FWBP 12 following surveillance testing, the field operator observed that the FWBP was rotating backwards. Based on indications, operators determined that the number 12 FWBP check valve was not fully closed. The HPCI system uses several components of the condensate and feed systems to perform its required safety functions including the number 11 and 13 feedwater booster pumps. The number 12 FWBP is a non-safety related pump which is in parallel with the HPCI system pumps. Thus, the reverse flow through the number 12 FWBP check valve could have adversely impacted HPCI system flow in the event of an accident. Therefore, the Station Shift Supervisor (SSS) declared both loops of the HPCI system to be inoperable in accordance with TS 3.1.8.c, "High Pressure Coolant Injection."





TS 3.1.8.c requires that a normal orderly shutdown be initiated within one hour and for the plant to be in cold shutdown within 24 hours. Operators reduced power to approximately 95 percent in preparation for the plant shutdown. Subsequently, the operators started number 12FWBP. This ensured that the HPCI system flow would not be degraded by the backflow through the number 12 FWBP check valve, and allowed the LCO to be exited. After further evaluation, action was taken to close the Number 12 FWBP discharge isolation valve and to remove the pump from service. The NMPC safety and availability assessment (probability risk assessment (PRA) review) showed that the plant configuration did not result in an increase in core damage frequency that was risk significant.

NMPC evaluated the operator's actions, including starting the FWBP, associated with the plant transient. Operator actions were acceptable, with the exception that the FWBP was started while it was still rotating backwards. While the desire to restore the HPCI system to an operable status was good, the decision to start the number 12 FWBP was imprudent. Additionally, engineering support was not involved in the decision. Because the FWBP was started while it was rotating in the reverse direction, engineering evaluated the electrical and mechanical stresses imposed on it during the reverse rotation start. The engineering analysis showed that the pump was capable of tolerating the stresses imposed on it and operating tests and inspection showed that damage was not apparent. As part of the corrective action for this issue, operations management provided additional operating guidance to operators concerning operating philosophy and operations management expectations.

c. Conclusions

On February 24, at Unit 1, both high pressure coolant injection systems became inoperable due to the potential to divert flow through a failed feedwater booster pump check valve. Therefore, the plant entered a 1 hour shutdown limiting condition for operation. To exit the limiting condition for operation, operators started the associated feedwater booster pump; however, the pump and motor were still rotating in the reverse direction when the pump was started. The action to start the pump while it was rotating in the reverse direction was imprudent. Additionally, engineering support was not involved in the decision. As a result, additional guidance had to be provided to the operators.

**04 Operator Knowledge and Performance**

**04.1 Observations of Operator Rounds (Unit 2)**

a. Inspection Scope (71707)

During this period, inspectors accompanied Unit 2 auxiliary operators on various plant rounds in the turbine and reactor buildings. The inspectors compared the operators' performance to applicable NMPC procedures and observed their watchstanding proficiency.



b. Observations and Findings

Unit 2 auxiliary operators observed demonstrated good watchstanding proficiency. The operators demonstrated an appropriate awareness of plant conditions. Also, the operators demonstrated a good questioning attitude as evidenced by their identifying, and logging of deficiencies, or verifying that the deficiencies were previously identified.

c. Conclusions

NRC inspectors observed that Unit 2 auxiliary operators demonstrated a good questioning attitude while performing their watchstanding duties.

**08 Miscellaneous Operations Issues (92700)**

- 08.1 (Closed) LER 50-410/98-28 Supplement 1: Inadvertent Isolation of Reactor Core Isolation Cooling (RCIC) and Shutdown Cooling (SDC) Due to Spurious Trip of a Temperature Switch. The technical issues associated with this licensee event report (LER) were described in NRC inspection report 50-410/98-19, Section O8.3. Supplement 1 provided additional information regarding the root cause analysis. The inspectors completed an on-site review of the additional information provided in LER 50-410/98-28 Supplement 1, and found it acceptable. This LER is closed.

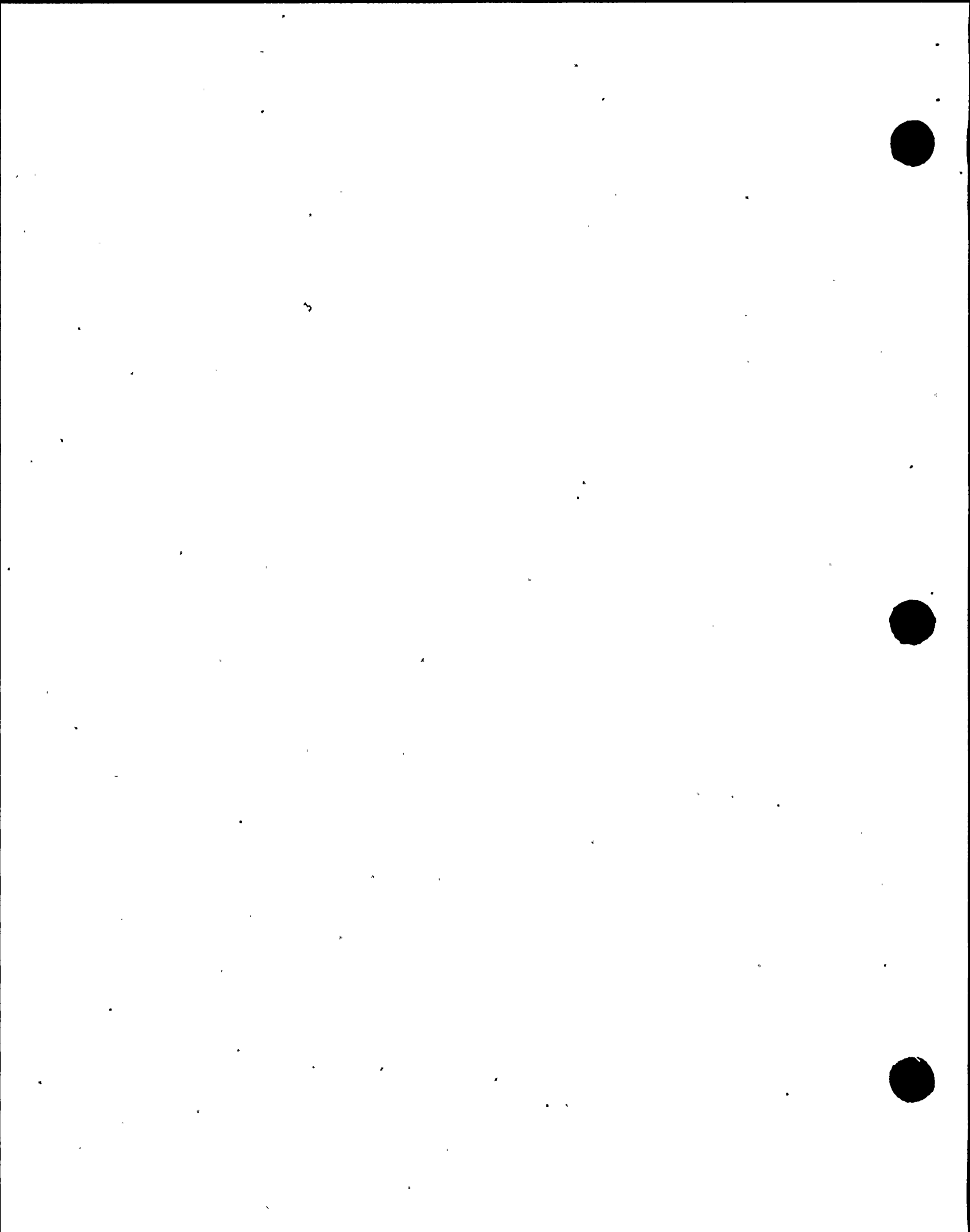
**II. Maintenance**

**M1 Conduct of Maintenance**

**M1.1 General Comments (61726, 62707)**

Using NRC Inspection Procedures 61726 and 62707, the resident inspectors periodically observed various maintenance activities and surveillance tests. As part of the observations, the inspectors evaluated the activities with respect to the requirements of the Maintenance Rule, as detailed in 10CFR50.65. In general, maintenance and surveillance activities were conducted professionally, with the work orders (WOs) and necessary procedures in use at the work site, and with the appropriate focus on safety. Specific activities and noteworthy observations are detailed in the inspection report. The inspectors reviewed procedures and observed all or portions of the following maintenance/surveillance activities:

- N2-WO 97-14212-28      Division II Standby Gas Treatment System Actuator Replacement Modification
- N2-WO 99-3573          Division II Emergency Diesel Generator Speed Sensor
- N2-WO 98-14271          Breaker Refurbishment
- N2-OSP-EGS-M@001      Diesel Generator & Diesel Air Start Valve Operability Test
- N1-ST-M4                  Emergency Diesel Generator Operability Test



M1.2 Missed Technical Specification Required Channel Functional Test of the Recirculation Flow Upscale Rod Block (Unit 2)

a. Inspection Scope (61726)

On March 4, NMPC determined that the TS-required semi-annual channel functional test of the recirculation flow upscale rod block was not completed within the required periodicity. The inspectors assessed the licensee's root cause determination and related corrective action. Included in this assessment was a review of the associated deviation/event report (DER), and operator logs. In addition, the inspectors discussed the issue with NMPC personnel, and attended the associated Station Operations Review Committee (SORC) meetings.

b. Observations and Findings

On March 4, NMPC determined that the TS-required semi-annual channel functional test of the recirculation flow upscale rod block was not completed within the required periodicity. Specifically, NMPC determined that the recently developed procedure N2-ISP-NMS-SA0001, "LPRM/APRM [Local Power Range Monitor/Average Power Range Monitor] Channel Functional Test," did not adequately test the recirculation flow upscale rod block as required by TS. Therefore, the recirculation flow upscale rod block functional was insufficiently tested during the completion of procedure N2-ISP-NMS-SA0001. Upon identification of this discrepancy, NMPC entered TS 4.0.3, regarding missed TS surveillance requirements, and successfully completed the testing within the allowed time interval. In addition, NMPC initiated DER 2-1999-656, to address the root cause and additional corrective and preventative actions.

NMPC developed procedure N2-ISP-NMS-SA0001 as part of the power range neutron monitor (PRNM) modification, which was installed at Unit 2 in the summer of 1998 during refueling outage number six (RFO6). NMPC created several procedures as part of this modification to satisfy the TS and other testing requirements associated with the new system. Procedure N2-ISP-NMS-SA0001 was developed to address the channel functional tests associated with the new PRNM. Although a channel functional test of recirculation flow upscale rod block was completed during the modification acceptance test, NMPC exceeded the maximum allowed frequency before completing the rod block test on March 4.

The inspectors reviewed the DER associated with the event and observed the SORC meetings associate with the issue. As described in the DER, the root cause was an inadequate review of procedure N2-ISP-NMS-SA-0001. The corrective actions included a procedure change to procedure N2-ISP-NMS-SA0001, and successful completion of the channel function test of the recirculation flow upscale rod block. In addition, NMPC verified that all instrumentation TS surveillance requirements associated with the PRNM system were adequately incorporated into procedures.

As discussed during the SORC meeting associated with DER 2-1999-0656, Unit 2 takes no credit within the accident analysis for the recirculation flow upscale rod block, and a



failure of the rod block has no impact on core damage frequency (CDF). Nonetheless, the failure to complete the recirculation flow upscale rod block channel function test as required by TS 4.3.6-1.5a is a violation. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as DER 2-1999-656. (NCV 50-410/99-03-01)

c. Conclusions

On March 4, the required technical specification surveillance tests for the recirculation flow upscale rod block were not completed at Nine Mile Point Unit 2. This missed surveillance requirement was due to an inadequate review during the development of the applicable instrumentation test procedure. This licensee-identified and corrected technical specification non-compliance is being treated as a Non-Cited Violation (NCV). (NCV 50-410/99-03-01)

M1.3 Risk Assessment during the Work Planning and Scheduling Processes

a. Inspection Scope (61726, 62707)

During the routine observations of maintenance activities, the inspectors performed a review focused on the licensee's risk assessment of work activities.

b: Observations and Findings

Throughout this inspection period, the inspectors reviewed the licensee's application of risk assessment during the work planning, scheduling and work package preparation processes. In particular, the inspectors reviewed the NMPC's use of risk assessments with respect to routine work week CDF calculations and task-specific PRAs. During the planning and scheduling process, the Unit 2 work week managers calculated the CDF for each day of a given work week. This type of assessment is not completed at Unit 1 because the implementation of the safety monitor software is still under development. Both units perform task-specific PRA reviews as deemed necessary. The inspectors considered the NMPC's use of risk assessments during the work planning and scheduling process to indicate a good safety focus.

At Unit 2, the inspectors observed that the insights gained for the CDF calculations were often used during the development of the work week schedule. For example, weekly surveillance activities were coordinated with safety system outages to avoid increases in CDF. Additionally, the inspectors routinely observed that the Unit 2 managers and SSSs questioned increases in CDF for a given activity to ensure that conducting the activity was justified. The inspectors noted that the licensee's process lacked guidance to recalculate CDF for changes in work activities that occurred after the issuance of the work week schedule. However, the guidance regarding emergent equipment unavailability provided in generation administrative procedure (GAP)-PSH-03, "Control of On-line Maintenance," was adequate.





The inspectors reviewed three task-specific PRAs and, in general, the PRAs were technically sound. However, the assumptions and contingencies provided in the written reviews were not always clearly communicated and sometimes required additional discussion with the preparer for clarification. NMPC management, acknowledged this shortcoming, and the inspectors noted improvement with the clarity of the written PRAs during the course of the inspection.

c. Conclusions

NMPC's use of risk assessment during the work planning and scheduling processes indicated a good safety focus. Specifically, the insights gained from core damage frequency calculations at Unit 2, and from task-specific probabilistic risk assessments at both units were used by NMPC to minimize risk due to planned maintenance activities.

M1.4 Review of Work Planning, Scheduling and Preparation of Work Packages

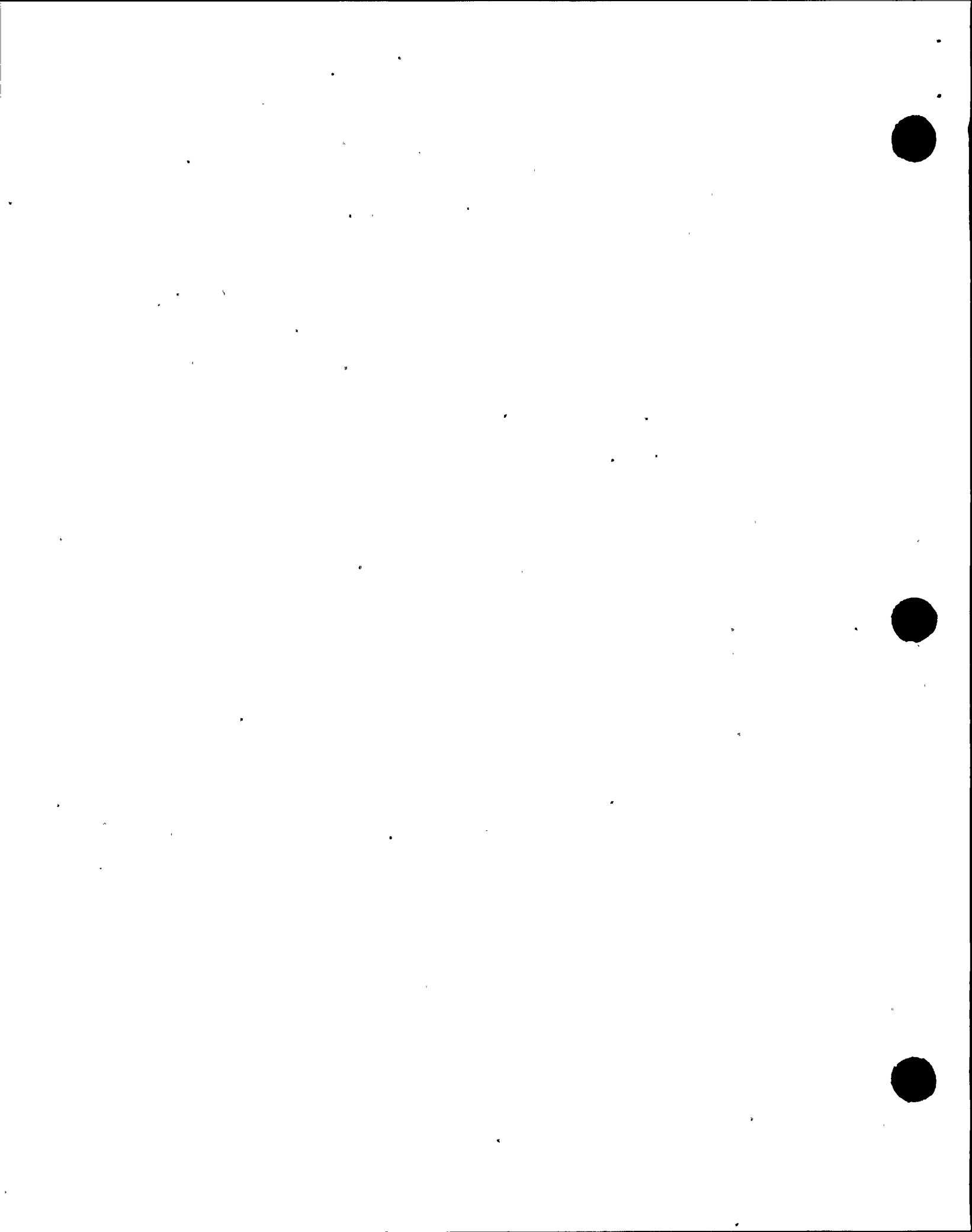
a. Inspection Scope (61726, 62707)

During the routine observations of maintenance activities, the inspectors reviewed various work orders to assess the quality and accuracy for performance of the associated work. This assessment included a review of all DERs associated with work planning and scheduling concerns initiated for the period February 1, to March 22, 1999, to better evaluate the licensee's work planning and scheduling process.

b. Observations and Findings

During recent reviews and observations of maintenance activities at both units, the inspectors became aware of various problems associated with the development and planning of work packages. As a result, the inspectors reviewed a list of all DERs initiated between February 1, and March 22, 1999, to better assess the licensee's work planning and scheduling performance. Of the approximately 500 DERs initiated during this period, 20 were associated with the planning, scheduling or implementation of work activities. The inspectors reviewed these 20 DERs. The type of problems described in the DERs reviewed included WOs with poor impact statements, work control process problems, improperly implemented holds, and the installation of incorrect parts. Based on this review, the inspectors considered the two most significant issues to be:

- DER 1-99-0793, "Cardox Testing Authorized with an Inoperable Diesel Generator." Specifically, the Unit 1 SSS erroneously authorized Cardox testing for the emergency diesel generator (EDG) 102 room per procedure N1-FST-FPL-SA008, while EDG 103 was inoperable for other work. During the performance of the Cardox testing, the EDG 102 room fans tripped for approximately ten minutes due to the Cardox initiation signal. This resulted in an unplanned condition with both EDGs inoperable.
- DER 2-99-0692, "Unexpected response when working feedwater 'A' temperature calibration." Specifically, when the technician lifted the leads to feedwater



temperature element 'A' to support the calibration, control room operators noticed an unexpected increase in indicated reactor core power.

Although these events did not result in violations of regulatory requirements, they indicated some performance deficiencies in work planning, scheduling and work package preparation. Furthermore, similar work planning, scheduling and work package preparation problems were noted in the last NRC inspection report (IR) 50-220 & 410/99-01, indicating that these types of problems have continued.

c. Conclusions

During routine observations of maintenance activities, performance deficiencies with work planning, scheduling and preparation of work packages continue to be noted. For example, at Unit 1, while one emergency diesel generator was inoperable for planned maintenance, Cardox testing in the other emergency diesel generator room was performed that caused both emergency diesel generators to be inoperable. At Unit 2, the calibration of a feedwater temperature element caused an unexpected increase in indicated reactor core power.

**M8 Miscellaneous Operations Issues (92712)**

- M8.1 (Closed) LER 50-410/98-24: Air Removal Pump Trip Circuitry Not In Logic System Functional Test (LSFT) of Main Steam Line High Radiation Trip.** On August 31, 1998, during the development of the Unit 2 improved standard TS, NMPC determined that the trip of the air removal pump on a main steam line radiation signal was not being tested in accordance with TS. TS surveillance requirement 4.3.2.2 requires that the trip function of the air removal pump to be tested. NMPC completed a one-time procedure change to procedure N2ISP-MSS-R109, "Main steam Line High Radiation Monitors Instrument Channel Calibration," and on September 1, 1998, successfully demonstrated the functionality of the air removal pump trip circuitry under WO 98-09892-00.

The inspectors completed an in-office review of the issue. During the review, the inspectors evaluated the applicable DER, LER and WO. In addition, the inspectors discussed the issue with NMPC personnel.

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. Specifically, the description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. The root cause and corrective and preventive actions as described in the LER were reasonable. Nonetheless, the failure to complete the LSFT of the main steam line high radiation trip of the air removal pumps is a violation of TS 4.3.2.2. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as LER 50-410/98-24 (NCV 50-410/99-03-02). The LER is closed.



### III. Engineering

#### E1. Conduct of Engineering

##### E1.1 (Closed) LER 50-220/99-02, ASME Code Pre-Service Examinations Not Performed on Emergency Condensers (Unit 1)

###### a. Inspection Scope (37551, 92700)

The inspectors reviewed the technical issues associated with this LER and conducted an on-site followup of the LER. In addition, NMPC's request for enforcement discretion from TS 3.1.3.e regarding emergency condensers and plant shutdown, and the Updated Final Safety Analysis Report (UFSAR) and TS requirements associated with the emergency condensers were reviewed.

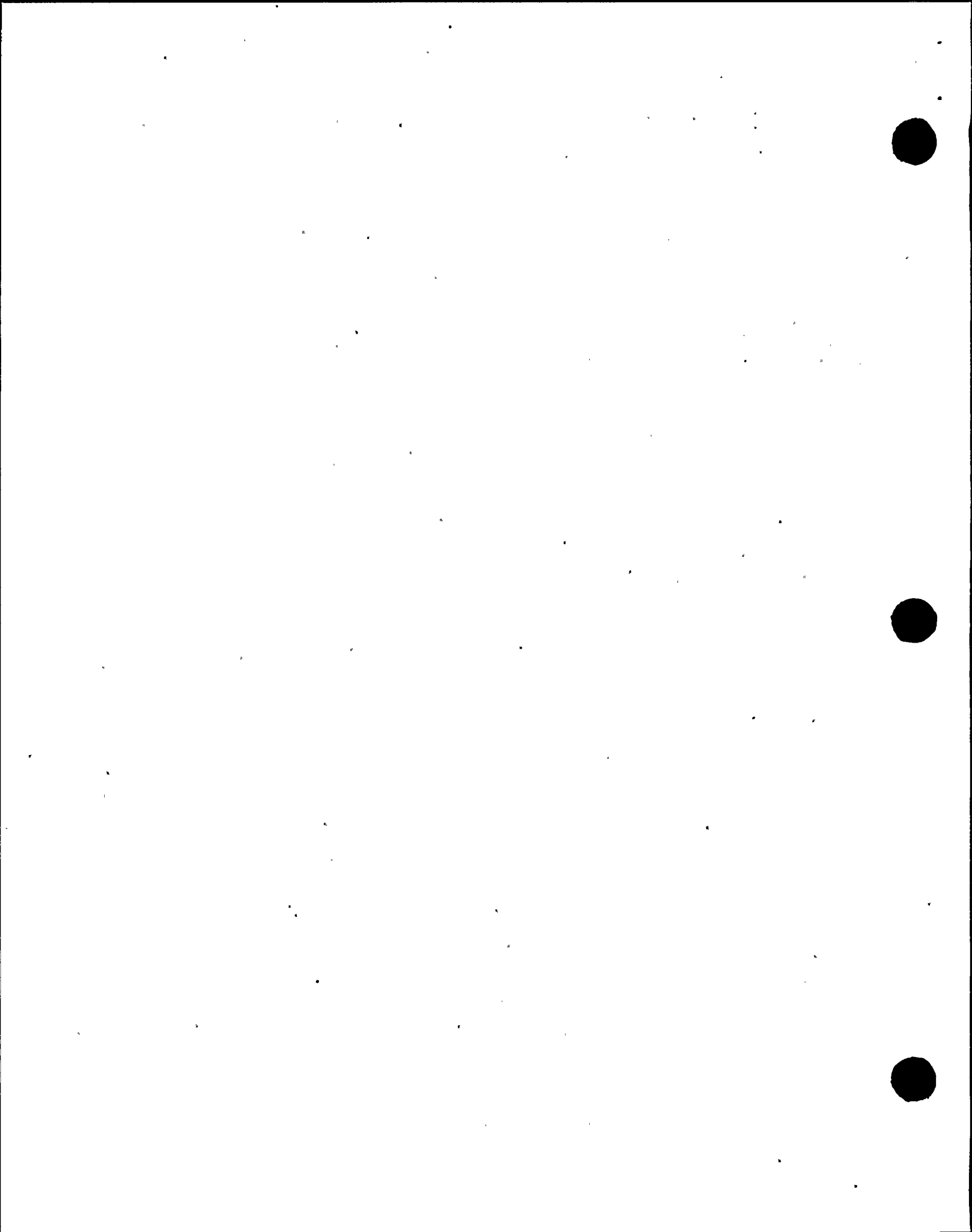
###### b. Observations and Findings

During the last quarter of 1997, the NMPC Unit 1 EC tube bundles were replaced due to leaking tubes. On February 17, NMPC discovered that an American Society of Mechanical Engineers (ASME) required pre-service weld inspection had not been performed as required for the newly installed emergency condenser tube bundles. The pre-service inspection required volumetric examinations of four welds located on each emergency condenser end bell. The nondestructive examinations (NDE) that were intended to be credited as pre-service inspections exams were found to be acceptable. However, the timing of NDE was inappropriate since it should have been performed prior to instead of after hydrostatic testing. This resulted in all four ECs being declared inoperable, which also required the initiation of a technical specification required shutdown. (Section O1.2)

Because of the plant impact, NMPC requested that enforcement discretion be granted to extend the allowed outage time by 48 hours to allow sufficient time to complete the appropriate NDE examinations. NMPC presented their basis for requesting enforcement discretion during a conference call with the NRC on February 17. After evaluation of the circumstances and safety basis for NMPC's request, the NRC granted enforcement discretion. On February 18, NMPC completed the required NDE with satisfactory results.

NMPC interpreted the code and erroneously concluded that the pre-hydrostatic examination met the ASME code requirements. Due to the improper application of the pre-service examination requirements of ASME Section XI, TS Surveillance requirements 4.2.6.a.1 for the in-service inspection and testing were not satisfied. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as LER 50-220/99-02. (NCV 50-220/99-03-03)

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. Specifically, the description and analysis of the event, as contained in



the LER, were consistent with the inspectors' understanding of the event. The root cause and corrective and preventive actions as described in the LER were reasonable. The LER is closed.

c. Conclusions

On February 17, NMPC identified that the pre-service examinations for emergency condenser welds at Unit 1 were not completed and therefore, the technical specification surveillance requirements were not satisfied. NMPC interpreted the Code and erroneously concluded that the pre-hydrostatic examination met the Code requirements. Due to the improper application of the pre-service examination requirements of American Society of Mechanical Engineers (ASME) Section XI, technical specification surveillance requirements for the in-service inspection and testing were not satisfied. The NMPC requested, and was subsequently granted, enforcement discretion from the NRC because this action involved minimal or no safety impact and had no adverse radiological impact on public health and safety. This licensee identified and corrected non-compliance is a Non-Cited Violation. (NCV 50-220/99-03-03) (Section E1.1)

E1.2 Required Reactor Vessel Core Shroud Weld Inspections Not Completed (Unit 1)

a. Inspection Scope (37551)

On March 5, 1999, NMPC Unit 1 concluded that during the previous outage, the weld inspections required by the boiling water reactor vessel and internals project (BWRVIP) for two vertical core shroud welds were not completed. The inspector discussed the issue with engineering personnel and reviewed the UFSAR, the DER and the engineering supporting analysis (ESA) which was used to support the NMPC decision that the core shroud remained operable.

b. Observations and Findings

Core shroud weld inspections are required by the BWRVIP to verify the integrity of the core shroud. Based on a review of the previous outage ultrasonic data using more sophisticated imaging software, an NMPC vendor determined that two vertical welds, V15 and V16, were not inspected. These vertical weld are located on the lower shroud shell course belt which is not a high fluence region and therefore less of a safety concern. NMPC documented the discrepancy in DER 1-99-0672. NMPC reviewed the data from the previous outage and other weld inspections were determined to be acceptable. Apparently, during the previous refueling outage, while intending to inspect welds V15 and V16, internal attachment welds were mistakenly inspected.

NMPC performed an ESA and determined that the structural integrity of the core shroud would not be affected. The ESA conclusion was based on analysis that showed that vertical weld integrity was not required as long as horizontal weld inspection results were acceptable, which was the case.





As referenced in the Unit 1#UFSAR, the core shroud vertical and horizontal welds are susceptible to intergranular stress corrosion cracking (IGSCC). As such, The NRC safety evaluation report considers that the BWRVIP core shroud inspection requirements are applicable. The UFSAR states that complete vertical weld throughwall cracking can be tolerated for the vertical welds provided horizontal weld integrity is established by inspection. Since horizontal weld integrity was established by inspection, the analysis demonstrated that the acceptance criteria remained satisfied. NMPC intends to conduct the vertical weld inspection during the next refueling outage which is scheduled to begin in April, 1999. The failure to complete the core shroud weld inspections for V15 and V16 is a violation of NRC requirements. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as DER 1-99-0672. (NCV 50-220/99-03-04).

c. Conclusions

On March 5, 1999, NMPC determined that the weld inspections required by the boiling water reactor and internals project (BWRVIP) were not completed at Unit 1 for two vertical welds located in the lower core shroud. NMPC provided a timely and thorough evaluation and assessment of the missed weld inspection and determined that the core shroud structural integrity would not be affected by the missed inspection. The failure to complete the core shroud weld inspections for V15 and V16 is a violation of NRC requirements. (NCV 50-220/99-03-04)

E1.3 (Closed) LER 50-410/99-01: NMP2 Outside the Design Basis Due to Safe Shutdown Service Water Pump Bay Unit Coolers Being Out-of-Service

a. Inspection Scope (37551, 92700)

On February 12, 1999, the Independent Safety Engineering Group (ISEG) identified that certain safety-related unit coolers credited in the UFSAR to be available during a control room fire and evacuation were routinely taken out of service without recognizing the impact on the safe shutdown capability. The inspectors assessed the licensee's actions taken to address this concern. The assessment included a review of associated DERs, the LER, and UFSAR sections, observations of the associated SORC meetings, and discussions with members of the NMPC staff.

b. Observations and Findings

The Unit 2 safe shutdown analysis assumed either division I or division II portions of the service water system to be available in the event of a control room fire and evacuation. Each division of service water contains three service water pumps located in a single pump bay. Each bay contains two unit coolers that provide cooling to the service water pumps and motors. The ISEG identified that only one unit cooler in each bay (2HVY\*UC2A and HVY\*UC2B) was provided with circuitry to ensure that it will remain available in the event of a control room fire. Subsequently, NMPC determined that from January 3 to 31, 1999, both unit coolers 2HVY\*UC2A and HVY\*UC2B were out of



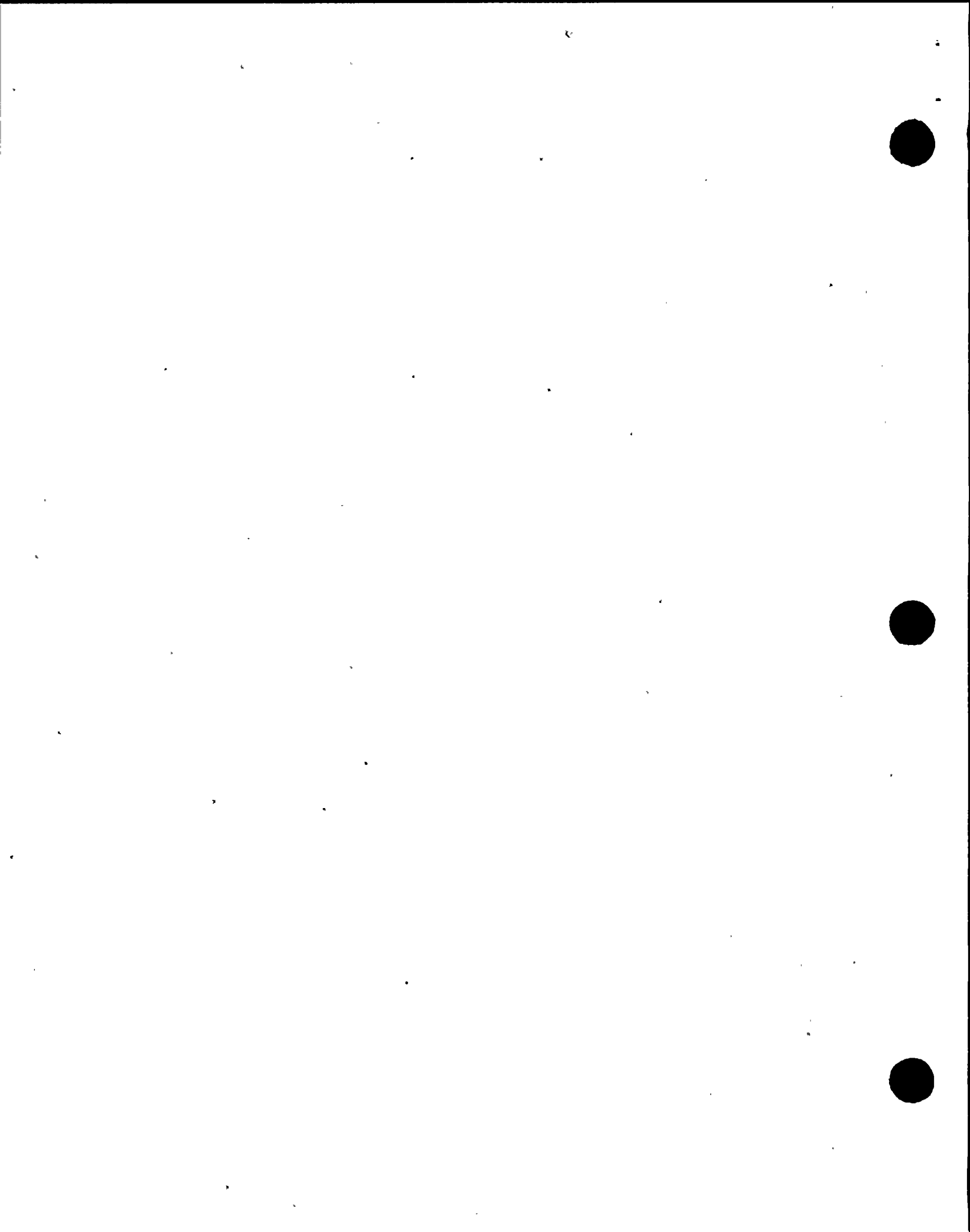
service at the same time. This placed Unit 2 in a condition outside the design basis. Additionally, NMPC believes that this condition occurred at other times and with other safe-shutdown equipment. Subsequently, NMPC issued LER 50-410/99-01, "NMP2 Outside the Design Basis Due to Safe Shutdown Service Water Pump Bay Unit Coolers Being Out-of-Service."

NMPC license condition 2.G requires implementation of the fire protection program described in the UFSAR. UFSAR Table 9B.8-3 lists the equipment that can be used to achieve safe shutdown of the unit in the case of a control room fire. UFSAR Section 9B.4.4.3.3 states that the analysis assumed either the division I or division II portion of the service water would be available. The failure to ensure the availability of the service water system is a violation of this license condition. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as LER 50-410/99-01. (NCV 50-410/99-03-05)

Upon identification of this discrepancy, NMPC established interim administrative controls, which consisted of holdouts on various safe shutdown equipment, and the SSS were briefed on the event. Additionally, NMPC established interim guidance for removing safe shutdown equipment from service. The interim controls were in the form of a Operations Department Night Note requiring the SSS to evaluate taking safe shutdown equipment out-of-service. Specifically, if no specific LCO exists when a component required for safe shutdown as listed in UFSAR Table 9B.8-3 is taken out-of-service, that an equipment status log (ESL) entry is required, and that the equipment be restored within seven days or apply additional compensatory actions. NMPC plans to keep these interim measures in-place until the development of procedural guidance to provide proper controls for when safe shutdown equipment is unavailable, and the subsequent formal training of the appropriate personnel.

As described in the associated LER, NMPC did not expect to implement formal guidance for removing safe shutdown equipment from service until August 31, 1999. The inspectors discussed the timing of this issue with operations management. Furthermore, the inspectors noted that the interim controls lacked defense-in-depth since they relied solely on the SSS and the operating crew to identify the unavailability of safe shutdown equipment rather than screening its planned unavailability earlier in the work planning and scheduling process. Subsequent to the end of the inspection period, the inspectors ascertained from the Unit 2 Operations Manager that guidance was recently added to the work planning and scheduling process to screen work for the unavailability of safe shutdown equipment. Additionally, the Operations Manager acknowledged that additional effort is being made to implement a procedure in a more timely manner.

As described in the LER, NMPC determined the root cause of this event to be inadequate managerial methods that resulted in the failure to consider the safe shutdown requirements during the initial development of normal operating procedure and, in 1992, the preventive maintenance rotation of the service water bay unit coolers. The inspectors considered the NMPC root cause evaluation to be technically sound. In addition to the immediate corrective actions described above, NMPC will be performing



an evaluation of their fire protection program with respect to safe shutdown. Any further corrective actions identified, along with a schedule for their completion will be provided in a supplement to the LER. The inspectors considered these actions to be reasonable.

NMPC noted in the LER that a contributing cause was that corrective actions for previous fire protection program deficiencies were too narrow in scope. However, the inspectors noted that the LER did not contain specific corrective actions to address this deficiency. Based on discussions with NMPC, the inspectors ascertained that the planned LER supplement will address this concern.

The inspectors reviewed the previous fire protection program deficiencies related to safe shutdown. This included LERs 50-410/96-15, "Appendix R Fire Induced Hot Shorts in Remote Shutdown System Valves," and 97-02, "Potential Inoperability of Emergency Diesel Generator Service Water Cooling Outlet Valves During a Control Room Fire," and DER 2-98-2213, "Unit Sub Alternate Feed Breakers Do Not Have App. R Contacts." Corrective actions to address LER 50-410/97-02, included verification that systems required to achieve safe shutdown during a control room fire were in accordance with the requirements of 10CFR50 Appendix A, Criterion 3. Although this review included a specific task to evaluate the design of the electrical isolation scheme (e.g., isolation/transfer switches) used to isolate circuits of required shutdown equipment from the fire affected area(s) during implementation of the alternate shutdown capability, it failed to recognize the deficiency associated with the service water bay unit coolers. Furthermore, DER 2-98-2213 pertained to a situation similar to the service water bay unit coolers, in that the circuit breaker control power for the normal feed to the unit substation included Appendix R disconnect switches, but the alternate feeder breakers did not. This issue was identified on July 17, 1998, with the disposition completed on October 11, 1998, without an extent of condition review or preventive actions.

NMPC license condition 2.G requires implementation of the fire protection program described in the UFSAR. UFSAR Appendix B, "Quality Assurance Program Topical Report" describes that the fire protection program is subject to the requirements of the NMPC's Quality Assurance Program, which requires the prompt identification and correction of conditions adverse to fire protection. The preventive actions described in LER 50-410/97-02, and in DER 2-98-2213 were narrowly focused and inadequate to identify the deficiency associated with service water pump bay unit coolers. This is considered a violation of license condition 2.G. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as LER 50-410/99-01. (NCV 50-410/99-03-06)

The inspectors completed an onsite review of LER 50-410/99-01. The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. Specifically, the description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. The root cause and corrective and preventive actions as described in the LER were reasonable. In addition, as described in the LER, NMPC will be performing an evaluation to identify



specific additional preventive actions, which will be provided in a supplement to this LER. This LER is closed.

c. Conclusions

On February 12, 1999, NMPC identified that Unit 2 service water bay unit coolers credited in the Updated Final Safety Analysis Report to be available during a control room fire and evacuation were routinely taken out of service without recognizing the impact on safe shutdown capability. The identification of this concern indicated a good questioning attitude. Nonetheless, the failure to ensure safe shutdown capability is a violation of the NMPC's license requirement regarding the fire protection program (NCV 50-410/99-03-05). Furthermore, the corrective actions for a previous Licensee Event Report and deviation/event report were inadequate in that the actions were narrowly focused which contributed to the delay in the identification of the concern with the service water bay unit coolers. (NCV 50-410/99-03-06)

IV. Plant Support

**R8 Miscellaneous RP&C Activities (92904)**

R8.1 (Closed) VIO 50-220/97-12-09: Failure to implement procedure as written resulted in an inadvertent ESF actuation. Specifically, during the calibration of the Unit 1 stack radiation monitor, the technician used an incorrect test source. This caused an automatic isolation of the drywell vent and purge lines. Subsequently, NMPC issued LER 50-220/97-13 "Engineered Safety Feature Actuation During Calibration Due to Personnel Error," addressing this event. This LER was reviewed and closed in NRC IR 50-220/97-12. Based on the review of the LER, which provided the root cause and corrective actions regarding the missing emergency lights, NMPC was not required to provide a separate response to the violation. The inspectors verified completion of the corrective actions that were not reviewed with the LER in NRC IR 50-220/97-12. This violation is closed.

**P4 Staff Knowledge and Performance in EP**

P4.1 Emergency Preparedness Drill

a. Inspection Scope (71750)

The inspectors observed the site emergency preparedness (EP) drill conducted on February 25. The inspectors reviewed the drill objectives, implementation of emergency plan procedures, emergency notifications and general EP facility condition.

b. Observations and Findings

The inspectors noted good participation in the drill by the emergency response personnel. For example, the technical support center was staffed and activated in a well organized fashion. Checklists were provided to facilitate emergency response. General





observation was that the facilities were in good condition. The exercise critique which was held provided useful information to correct deficiencies noted and to address problems which were identified.

c. Conclusions

A site emergency preparedness exercise conducted on February 25, demonstrated acceptable performance by emergency response personnel. The post exercise drill critique provided good insight into performance and constructive criticism.

**F3 Fire Protection Procedures and Documentation**

**F3.1 (Closed) LER 50-220/99-01: Outside Design Basis Due to Failure to Revise Satellite Pre-Fire Plans (Unit 1)**

a. Inspection Scope (71750, 92700)

The inspectors reviewed the NMPC commitments documented in a November 6, 1998 request regarding exemption from the requirements of 10CFR70.24(a), "Criticality Accident Requirements." The inspectors conducted an on-site review and discussed fire fighting techniques for a fire on the refuel floor with several fire brigade members, reviewed pre-fire plan procedures, and the LER.

b. Observations and Findings

The inspectors identified that the satellite pre-fire plans were not changed as required. The master copy of the pre-fire plans was changed to reflect the NMPC commitment regarding fire fighting on the refuel floor, but changes to satellite copies were not implemented.

The master copy of Fire Protection Instruction N1-FPI-PFP-0101, "Unit 1 Pre-Fire Plans," was updated on December 22, 1998. The revision of the pre-fire plans was required to meet one of the commitments made in the NMPC application for exemption from the requirements of 10CFR70.24 as granted by the NRC in a letter dated December 10, 1998. One of the criteria for approval of the exemption concerned the ability to preclude optimum moderation of fuel in the new fuel storage racks. NMPC committed to revise the pre-fire plans for the area of the new fuel storage vault to ensure that in the event of a fire, firefighting foam or water would not be directed toward the new fuel vault during dry storage of the new fuel. NMPC determined that they operated outside their design basis from January 12, 1999, when new fuel was first placed in the new fuel storage vault, until January 25, 1999, when the revisions of the satellite pre-fire plans were satisfactorily implemented.

There are other design aspects for fuel storage which would reduce the consequences of a fire in the new fuel storage vault. Of note is that the new fuel storage vault includes a drain to preclude flooding and an area radiation monitor. Also, there is no firefighting foam in the reactor building including the refuel floor. Fire protection personnel have



been trained to utilize dry chemical extinguishers as the preferred method and they were aware of the fire fighting aspects for the new fuel storage vault in the event of a fire.

The cause of the failure to implement the required procedure changes was poor administration and supervisor control of fire protection procedure revisions. DER 1-99-0246 was issued to document the problem and to monitor corrective actions. The satellite copies of the pre-fire plans were updated and fire protection personnel were made aware of the change. The failure to update the pre-fire plans is a violation of the license conditions. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as LER 50-220/99-01. (NCV 50-220/99-03-07)

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. Specifically, the description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. The root cause and corrective and preventive actions as described in the LER were reasonable. The LER is closed.

c. Conclusions

The NRC identified that copies of the pre-fire plans for the refuel floor were not changed to reflect NMPC commitments made for an exemption to 10CFR70.24, "Criticality Accident Requirements." The cause was attributed, in part, to poor administrative control and supervision processes for ensuring that fire protection procedures are updated. (NCV 50-220-99-03-07)

V. Management Meetings

X1 **Exit Meeting Summary**

The inspectors presented the inspection results to members of the licensee management at the conclusion of the inspection on April 16, 1999. The licensee acknowledged the findings presented.



ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

Niagara Mohawk Power Corporation

D. Bosnic	Manager, Operations, Unit Two
S. Doty	Manager, Maintenance, Unit One
N. Paleologos	Plant Manager, Unit Two
L. Pisano	Manager, Maintenance, Unit Two
R. Smith	Plant Manager, Unit One
N. Rademacher	Manager, Quality Assurance
D. Topley	Manager, Operations, Unit One

INSPECTION PROCEDURES USED

IP 37551	On-Site Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observations
IP 71707	Plant Operations
IP 71750	Plant Support
IP 90712	In-Office Review of Written Reports of Non-Routine Events at Power Reactor Facilities
IP 92700	Onsite Follow-up of Written Reports of Non-Routine Events at Power Reactor Facilities
IP 92904	Followup - Plant Support

ITEMS OPENED, CLOSED, AND UPDATED

OPENED

50-410/99-03-01	NCV	Missed technical specification required channel functional test of the Unit 2 recirculation flow upscale rod block
50-410/99-03-02	NCV	Failure to complete the LSFT of the main steam line high radiation trip of the air removal pumps
50-220/99-03-03	NCV	Missed technical specification required pre-service weld inspection for the Unit 1 emergency condensers
50-220/99-03-04	NCV	Failure to inspect two vertical welds in the lower core shroud
50-410/99-03-05	NCV	Inability to achieve safe shutdown due to Unit 2 service water bay unit coolers being out-of-service



50-410/99-03-06	NCV	Inadequate corrective actions regarding Unit 2 safe shutdown capability
50-220/99-03-07	NCV	Failure to update satellite copies of the Unit 1 pre-fire plan for commitments associate with "Criticality Accident Requirements"
<b><u>CLOSED</u></b>		
50-410/98-28-01	LER	Inadvertent Isolation of RCIC and SDC due to Spurious Trip of a temperature Switch
50-410/99-03-01	NCV	Missed technical specification required channel functional test of the unit 2 recirculation flow upscale rod block
50-410/98-24	LER	Air Removal Pump Trip Circuitry Not In Logic System Functional Test (LSFT) of Main Steam Line High Radiation Trip.
50-410/99-03-02	NCV	Failure to complete the LSFT of the main steam line high radiation trip of the air removal pumps
50-220/99-02	LER	ASME Code Pre-Service Examinations Not Performed on Emergency Condensers
50-410/99-01	LER	NMP2 Outside the Design Basis Due to Safe Shutdown Service Water Pump Bay Unit Coolers Being Out-of-Service
50-220/99-03-03	NCV	Missed technical specification required pre-service weld inspection for the Unit 1 emergency condensers
50-220/99-03-04	NCV	Failure to inspect two vertical welds in the lower core shroud
50-410/99-03-05	NCV	Inability to achieve safe shutdown due to Unit 2 service water bay unit coolers being out-of-service
50-410/99-03-06	NCV	Inadequate corrective actions regarding Unit 2 safe shutdown capability
50-220/99-01	LER	Outside Design Basis Due to Failure to Revise Satellite Pre-Fire Plans
50-220/97-12-09	VIO	Failure to implement procedure as written resulted in an inadvertent engineered safety feature (ESF) actuation
50-220/99-03-07	NCV	Failure to update satellite copies of the Unit 1 pre-fire plan for commitments associate with "Criticality Accident Requirements"





LIST OF ACRONYMS USED

APLHGR	Average Planar Heat Generation Rate
APRM	Average Power Range Monitor
ASME	American Society of Mechanical Engineers
BWRVIP	Boiling Water Reactor Vessel and Internals Project
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
DER	Deviation/Event Report
EC	Emergency Condenser
ECS	Emergency Cooling System
EDG	Emergency Diesel Generators
EP	Emergency Preparedness
ESA	Engineering Supporting Analysis
ESF	Engineered Safeguards Feature
ESL	Equipment Status Log
FWBP	Feedwater Booster Pump
GAP	Generation Administration Procedure
HPCI	High Pressure Core Injection
IGSCC	Intergranular Stress Corrosion Cracking
IR	Inspection Report
ISEG	Independent Safety Engineering Group
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LPRM	Local Power Range Monitor
LSFT	Logic System Functional Test
APRM	Local Power Range
NCV	Non Cited Violation
NDE	Nondestructive Examination
NMPC	Nine Mile Point Corporation
NRC	Nuclear Regulatory Commission
PRA	Probability Risk Analysis
PRNM	Power Range Neutron Monitor
RFO6	Refueling Outage Number Six
SORC	Station Operating Review Committee
SSS	Station Shift Supervisor
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
Unit 1	Nine Mile Point Unit 1
Unit 2	Nine Mile Point Unit 2
WO	Work Order

