



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
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KING OF PRUSSIA, PA 19406-1415

November 5, 2008

Mr. Keith J. Polson
Vice President Nine Mile Point
Nine Mile Point Nuclear Station, LLC
P.O. Box 63
Lycoming, NY 13093

**SUBJECT: NINE MILE POINT NUCLEAR STATION - NRC INTEGRATED INSPECTION
REPORT 05000220/2008004 and 05000410/2008004**

Dear Mr. Polson:

On September 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Nine Mile Point Nuclear Station, Units 1 and 2. The enclosed integrated inspection report documents the inspection results discussed on October 24, 2008, with you and members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one self-revealing finding and one NRC-identified finding of very low safety significance (Green). One of the findings was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it was entered into your corrective action program (CAP), the NRC is treating this violation as a non-cited violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you contest the non-cited violation noted in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-001; and the NRC Senior Resident Inspector at Nine Mile Point Nuclear Station.

In accordance with 10 CFR Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the

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Sincerely,

/RA/

Glenn T. Dentel, Chief
Projects Branch 1
Division of Reactor Projects

Docket No.: 50-220, 50-410
License No.: DPR-63, NPF-69

Enclosure: Inspection Report 05000220/2008004 and 05000410/2008004
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-220, 50-410

License No.: DPR-63, NPF-69

Report No.: 05000220/2008004 and 05000410/2008004

Licensee: Nine Mile Point Nuclear Station, LLC (NMPNS)

Facility: Nine Mile Point, Units 1 and 2

Location: Lake Road
Oswego, NY

Dates: July 1, 2008 through September 30, 2008

Inspectors: E. Knutson, Senior Resident Inspector
D. Dempsey, Resident Inspector
S. Barr, Senior Emergency Preparedness Specialist
J. Furia, Senior Health Physicist
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Enclosure

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SUMMARY OF FINDINGS

IR 05000220/2008004, 05000410/2008004; 07/01/08 - 09/30/08; Nine Mile Point Nuclear Station, Units 1 and 2; Maintenance Risk Assessment and Event Followup.

The report covered a three-month period of inspection by resident inspectors and regional specialist inspectors. One Green non-cited violation (NCV), and one Green finding, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing finding was identified on July 14, 2008, when inadequate maintenance practices, during replacement and troubleshooting of a Unit 2 radioactive waste sump pump, caused an electrical transient that resulted in the loss of numerous plant components and required a power reduction. The inadequate maintenance practices included failure to perform post-maintenance testing and continuation of troubleshooting despite having obtained results that were not consistent with the troubleshooting plan. This issue was entered into NMPNS's corrective action program for evaluation.

The finding was greater than minor because it affected the human performance attribute of the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was evaluated in accordance with IMC 0609 and determined to be of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available, and did not screen as potentially risk significant due to external events. The finding had a cross-cutting aspect in the area of human performance because NMPNS did not appropriately plan the pump troubleshooting activity by incorporating abort criteria (H.3.a per IMC 0305). (Section 4OA3)

Cornerstone: Mitigating Systems

- Green. An NRC-identified non-cited violation (NCV) of 10 CFR 50.65(a)(4) was identified for inaccurate risk assessments completed for August 5 and 6, 2008. Specifically, the unavailable reactor core isolation cooling (RCIC) system was not properly incorporated into the risk assessment. The cause was determined to be that an error had been made while entering a change to the risk monitor computer

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software, which resulted in RCIC incorrectly being assigned a zero risk importance. As corrective actions, the modeling of RCIC was corrected and a verification of all mapping codes used in the risk monitor was performed.

The finding was greater than minor because the risk assessment for RCIC system maintenance was inadequate due to inaccurate information that was provided to the risk assessment tool. As a result, the overall elevated plant risk, when correctly assessed, put the plant into a higher licensee-established risk category. The finding was evaluated in accordance with IMC 0609, Appendix K, and determined to be of very low safety significance because the incremental core damage probability deficit (ICDPD) was less than $1E-6$. The finding had a cross-cutting aspect in the area of human performance because NMPNS did not appropriately plan work activities by incorporating valid risk insights (H.3.a per IMC 0305). (Section 1R13)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Nine Mile Point Unit 1 began the inspection period at full rated thermal power (RTP). Several short duration power reductions were performed for maintenance on reactor recirculation pump (RRP) motor-generators, and on September 27, power was reduced to 68 percent for a control rod sequence exchange, single rod scram time testing, and turbine valve testing. Power was restored to 100 percent the following day, and remained there for the rest of the inspection period.

Nine Mile Point Unit 2 began the inspection period at full RTP. On July 14, power was reduced to 50 percent due to loss of two high pressure feedwater heaters (FWHs), which resulted from an electrical transient due to an equipment failure. The FWHs were subsequently returned to service, and power was restored to 100 percent the next day. On September 4, an increase in drywell airborne radioactive particulate activity, along with indication of a slowly degrading pump seal for the 'B' RRP and an apparent rapid increase in drywell unidentified leakage, prompted operators to perform a rapid power reduction to 93 percent. It was later determined that drywell leakage was actually unchanged and stable, as were 'B' RRP seal parameters. Power was restored to full RTP later that day. On September 18, power was reduced to 86 percent due to a problem with the main transformer cooling system. The problem was resolved and power was restored to full RTP later that day. Unit 2 continued to operate at full RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - One sample)

a. Inspection Scope

On July 24, 2008, the inspectors reviewed NMPNS's actions in response to a severe electrical storm in the vicinity of the station. During this storm, Unit 1 experienced a momentary loss of one of the two 115 kilovolt (kV) offsite power lines (line 1) due to a lightning strike. Offsite power continued to be supplied to both vital switchboards from offsite line 4, so this event did not result in an automatic start of the associated emergency diesel generator (EDG). The affected breaker, onsite supply breaker R-10, automatically reclosed as designed after approximately 5 seconds. The event did not have any significant effect on plant operations. The inspectors verified that operators implemented actions specified in the associated procedure to reduce the impact that the adverse weather had on the site. The inspectors also verified that the NMPNS procedures addressed measures to monitor and maintain availability and reliability of the other offsite alternating current (AC) power system and the onsite alternate AC power system during adverse weather conditions.

b. Findings

Enclosure

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdown (71111.04 - Four samples)

a. Inspection Scope

The inspectors performed partial system walkdowns to verify risk-significant systems were properly aligned for operation. The inspectors verified the operability and alignment of these risk-significant systems while their redundant trains or systems were inoperable or out of service for maintenance. The inspectors compared system lineups to system operating procedures, system drawings, and the applicable chapters in the updated final safety analysis report (UFSAR). The inspectors verified the operability of critical system components by observing component material condition during the system walkdown. The inspectors performed partial walkdowns of the following systems:

- Unit 1 core spray system 111 while core spray system 112 was inoperable for in-service testing;
- Unit 1 core spray system 12 while the 112 core spray topping pump was inoperable and unavailable for maintenance;
- Unit 2 125 volt direct current (DC) electrical system, Divisions 1 and 2, due to high safety significance; and
- Unit 2 high pressure core spray (HPCS) system while the reactor core isolation cooling (RCIC) system was inoperable for maintenance.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown (71111.04S - One sample)

a. Inspection Scope

The inspectors performed a complete walkdown of the Unit 1 emergency service water (ESW) system to identify discrepancies between the existing equipment configuration and that specified in the design documents. During the walkdown, system drawings and operating procedures were used to determine the proper equipment alignment and operational status. The inspectors reviewed the open maintenance work orders (WOs) that could affect the ability of the system to perform its functions. Documentation associated with temporary modifications, operator workarounds, and items tracked by plant engineering were also reviewed to assess their collective impact on system operation. In addition, the inspectors reviewed the condition report (CR) database to verify that equipment alignment problems were being identified and appropriately resolved.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly Inspection (71111.05Q - Six samples)

a. Inspection Scope

The inspectors toured areas important to reactor safety at NMPNS to evaluate the station's control of transient combustibles and ignition sources, and to examine the material condition, operational status, and operational lineup of fire protection systems including detection, suppression, and fire barriers. The areas inspected included:

- Unit 1 reactor building (RB) 261 foot elevation;
- Unit 1 RB 281 foot elevation;
- Unit 1 emergency cooling system steam isolation valve room, RB 298 foot elevation;
- Unit 2 RB 261 foot elevation;
- Unit 2 RB 289 foot elevation; and
- Unit 2 RB 353 foot elevation.

b. Findings

No findings of significance were identified.

.2 Annual Inspection (71111.05A - One sample)

a. Inspection Scope

The inspectors completed one annual fire drill observation inspection sample. The inspectors observed a fire brigade drill on September 17, 2008, in the Unit 1 turbine building. The inspectors observed brigade performance during the drill to evaluate donning and use of protective equipment and self-contained breathing apparatus, fire brigade leader command and control, fire brigade response time, communications, and the use of pre-fire plans. The inspectors attended the post-drill critique and reviewed the disposition of issues and deficiencies identified during the drill.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - One sample)

a. Inspection Scope

The inspectors completed one internal flooding sample. The inspectors reviewed the individual plant examination and UFSAR for Unit 1 concerning internal flooding events and completed walkdowns of one area in which flooding could have a significant impact on risk. The RB torus room and the RB northwest corner room were reviewed.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A - One sample)

a. Inspection Scope

The inspectors reviewed maintenance records for Unit 1 102 EDG cooling water heat exchangers 79-03 and 79-04, performed in accordance with N1-MPM-079-412, "Diesel Generator Cooling Water Heat Exchanger and Temperature Control Valve Maintenance." The inspectors reviewed EDG performance data to verify that heat exchanger operation was consistent with the design basis. The inspectors interviewed the system engineer to verify overall condition of the heat exchangers.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11Q - Two samples)

a. Inspection Scope

The inspectors evaluated two simulator scenarios in the licensed operator regualification training (LORT) program. The inspectors assessed the clarity and effectiveness of communications, the implementation of appropriate actions in response to alarms, the performance of timely control board operation, and the oversight and direction provided by the shift manager. During the scenario, the inspectors also compared simulator performance with actual plant performance in the control room. The following scenarios were observed:

- On August 26, 2008, the inspectors observed Unit 1 LORT to assess operator and instructor performance during a scenario involving a main generator hydrogen seal oil pump failure, a grid transient that resulted in a loss of offsite 115 kV power with failure of the 103 EDG to start, a loss of coolant accident, and failure of the reactor vessel fuel zone water level indicator. The inspectors evaluated the performance of risk significant operator actions including the use of special operating procedures (SOPs) and emergency operating procedures (EOPs).

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- On 5 September, 2008, the inspectors observed Unit 2 LORT to assess operator and instructor performance during a scenario involving a loss of drywell cooling, a loss of normal power to the Division 1 and 3 electrical busses, high motor temperature on one of the operating reactor feedwater pumps that led to loss of the pump, and a loss of coolant accident in the drywell along with failure of all reactor pressure vessel (RPV) level indication, requiring RPV flooding. The inspectors evaluated the performance of risk significant operator actions including the use of SOPs and EOPs.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - Three samples)

a. Inspection Scope

The inspectors reviewed performance-based problems and the performance and condition history of selected systems to assess the effectiveness of the maintenance program. The inspectors reviewed the systems to ensure that the station's review focused on proper maintenance rule scoping in accordance with 10 CFR Part 50.65, characterization of reliability issues, tracking system and component unavailability, and 10 CFR Part 50.65 (a)(1) and (a)(2) classification. In addition, the inspectors reviewed the site's ability to identify and address common cause failures and to trend key parameters. The following four maintenance rule inspection samples were reviewed:

- Unit 1 125 volt DC system based on multiple uninterruptible power supply (UPS) equipment issues;
- Unit 2 control building heating, ventilation, and air conditioning (HVAC) system based on equipment problems that developed following implementation of a modification; and
- Unit 2 reactor recirculation system based on recirculation pump seal leakage issues.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - Six samples)

a. Inspection Scope

The inspectors evaluated the effectiveness of the maintenance risk assessments required by 10 CFR Part 50.65 (a)(4). The inspectors reviewed equipment logs, work schedules, and performed plant tours to verify that actual plant configuration matched the assessed configuration. Additionally, the inspectors verified that risk management actions for both planned and emergent work were consistent with those described in station procedures. The inspectors reviewed risk assessments for the activities listed below.

Unit 1

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- Week of July 14, 2008, that included a rebuild of 112 core spray topping pump, 13 turbine building closed loop cooling system heat exchanger cleaning, and emergent maintenance to troubleshoot a trip of the 13 instrument air (IA) compressor, combined within a scheduled maintenance period.
- Week of July 21, 2008, that included 112 containment spray raw water system maintenance and quarterly surveillance, 102 EDG monthly surveillance, and emergent issues with reactor protection system UPS 162B that resulted in a half scram signal, and loss of flow monitoring capability for the electromatic relief valves and safety valves due to a failed power supply.
- Week of August 18, 2008, that included maintenance on the 13 RRP motor-generator, a power reduction to 85 percent for recovery of 13 RRP, and emergent maintenance to replace the 103 EDG raw water pump due to low discharge pressure.

Unit 2

- Week of July 14, 2008, that included Division 1 EDG monthly surveillance, residual heat removal (RHR) 'A' quarterly surveillance, replacement of unannealed red brass piping in the IA system, and emergent maintenance to troubleshoot a level control problem with the 2B low pressure FWH, and troubleshooting activities associated with a radioactive waste sump pump that resulted in multiple plant equipment issues and required a power reduction to 50 percent.
- Week of July 21, 2008, that included HPCS system maintenance and quarterly surveillance, a 24 hour run of the Division 3 EDG for a two year surveillance, and emergent maintenance to troubleshoot Division 3 EDG voltage oscillations, a level control problem with the 2B low pressure FWH, and a leak from the low pressure core spray pressure maintenance (keepfill) pump mechanical seal water supply.
- Week of August 4, 2008, that included inspection of the 'B' IA dryer, maintenance on the 'C' IA compressor, weld repair of the 'C' IA receiver, a three day maintenance period on the RCIC system, and RCIC quarterly surveillance.

b. Findings

Introduction. An NRC-identified Green NCV of 10 CFR 50.65(a)(4) was identified for inaccurate risk assessments completed for August 5 and 6, 2008. Specifically, the unavailable reactor core isolation cooling (RCIC) system was not properly incorporated into the risk assessment.

Description. During the week of August 4, 2008, the RCIC system was made inoperable and unavailable on several occasions for planned maintenance activities. When the inspectors reviewed NMPNS's daily risk assessment on August 6, they noted that RCIC would be inoperable and unavailable and that the value for daily CDF risk was indicated to be "Low." The inspectors questioned this, based on previous experience when RCIC having been unavailable had caused the daily CDF risk to be "Medium." On August 8,

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NMPNS determined that the daily CDF risk should have been "Medium" while RCIC was inoperable and unavailable. Prior to this determination, RCIC had been inoperable and unavailable on two occasions during the week, with a total unavailability time of approximately 30 hours (hrs).

The cause of the incorrect risk assessment was determined to be that a typographical error had been made on June 30, 2008, while entering a change to the risk monitor computer software. This resulted in an error in the coding used to map RCIC unavailability to risk importance in the Unit 2 PRA model, incorrectly giving it a zero risk importance. As corrective actions, the modeling of RCIC was corrected and a verification of all mapping codes used in the risk monitor was performed. This issue was entered into the corrective action program (CAP) as CR 2008-6363.

The performance deficiency associated with this event was that inaccurate information was entered in the risk monitor software resulting in an inadequate risk assessment being used while the RCIC system was inoperable and unavailable during the August 4, 2008 work week.

Analysis. The finding was greater than minor because it was similar to IMC 0612, Appendix E, example 7.e, in that the risk assessment for RCIC system maintenance was inadequate (i.e., it underestimated the risk because of personnel error) because relevant information provided to the risk assessment tool was inaccurate. As a result, the overall elevated plant risk, when correctly assessed, put the plant into a higher licensee-established risk category. Per IMC 0609, Attachment 4, Phase 1, "Initial Screening and Characterization of Findings," the finding was evaluated in accordance with IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The baseline (zero-maintenance) core damage frequency was $1.35\text{E-}5/\text{year (yr)}$ and the actual core damage frequency (with RCIC unavailable) was $5.10\text{E-}5/\text{yr}$. Therefore, the actual incremental core damage frequency was $(5.10 - 1.35)\text{E-}5/\text{yr} = 3.75\text{E-}5/\text{yr}$, and the actual incremental core damage probability ($\text{ICDP}_{\text{actual}}$) was $(3.75\text{E-}5/\text{yr} \times 30 \text{ hrs}) / 8760 \text{ hrs/yr} = 1.28\text{E-}7$. Although a risk assessment had been performed, the value was essentially the zero-maintenance core damage frequency; that is, it was evaluated the same as if a risk assessment had not been performed. Therefore, the incremental core damage probability deficit (ICDPD) was equal to $\text{ICDP}_{\text{actual}}$. Since ICDPD was less than $1\text{E-}6$, the finding was determined to be of very low safety significance (Green).

The finding had a cross-cutting aspect in the area of human performance because NMPNS did not appropriately plan work activities by incorporating valid risk insights (H.3.a per IMC 0305).

Enforcement. 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," subsection (a)(4) states, in part, "Before performing maintenance activities . . . the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. The scope of the

assessment may be limited to structures, systems, and components that a risk-informed evaluation process has shown to be significant to public health and safety." The NMPNS

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Maintenance Rule Manual classifies the Unit 2 RCIC system as a high safety significant system.

Contrary to the above, on August 8, 2008, it was identified that NMPNS had not correctly assessed the risk associated with maintenance activities on August 5 and August 6 that had made the Unit 2 RCIC system inoperable and unavailable, in that the daily CDF risk had been determined to be "Low" when the actual value was "Medium." Because this violation is of very low safety significance and was entered into the CAP as CR 2008-6363, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000410/2008004-01, Incorrect Risk Assessment for RCIC Unavailability)**

1R15 Operability Evaluations (71111.15 - Seven samples)

a. Inspection Scope

The inspectors evaluated the acceptability of operability evaluations, the use and control of compensatory measures, and compliance with technical specifications (TSs.) The evaluations were reviewed using criteria specified in NRC Regulatory Issue Summary 2005-20, "Revision to Guidance Formerly Contained in NRC Generic Letter 91-18, 'Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability'," and Inspection Manual Part 9900, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety." The inspectors' review included verification that the operability determinations were made as specified by Procedure CNG-OP-1.01-1002, "Conduct of Operability Determinations / Functionality Assessments." The technical adequacy of the determinations was reviewed and compared to the TSs, UFSAR, and associated design basis documents (DBDs). The following evaluations were reviewed:

- CR 2008-5852 concerning the operability of the Unit 1 drywell equipment drain tank input to the drywell leak detection system, in light of anomalous tank level and leak rate indications;
- CR 2008-6536 concerning degraded flow from the Unit 1 EDG 103 raw water pump, identified during its quarterly surveillance;
- CR 2008-6643 concerning water and sediment in Unit 1 EDG fuel oil storage tank bottom samples;
- CR 2008-5841 concerning degraded performance of one of the Unit 2 'A' RHR pump room unit coolers;
- CR 2008-5439 concerning operability of the Unit 2 Division 2 EDG in the emergency mode with a failed overspeed butterfly valve limit switch that had caused the EDG to shut down while operating in the test mode;
- CR 2008-5885 concerning the effect of increased Unit 2 suppression pool leakage on emergency core cooling system pump operability; and
- CR 2008-6647 concerning low peak firing pressure on one cylinder for the Unit 2 Division 3 EDG.

b. Findings

Enclosure

No findings of significance were identified.

1R18 Plant Modifications (71111.18 - Four samples)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed a Unit 2 temporary modification to raise the 'D' service water pump outboard bearing temperature setpoint from 130 degrees Fahrenheit (F) to 150 F. The setpoint was raised to allow for new packing run-in on the pump. The inspectors reviewed the 10 CFR Part 50.59 screening against the system design bases documentation to verify that the modification did not affect system operability. The inspectors reviewed the vendor manual to verify that increased temperature would not affect the pump's reliability.

The inspectors reviewed a Unit 2 temporary modification that installed temporary power to the B-phase main transformer cooling pumps and fans from the installed spare 'D' main transformer. The inspectors reviewed the at-risk activity work package, interviewed the system engineer, and reviewed the 10 CFR Part 50.59 screening against the system design bases documentation to verify that the modification did not affect system operability. The inspectors also reviewed the WO that installed and removed the temporary power and walked down the equipment after work completion to verify that the equipment had been returned to its original configuration.

b. Findings

No findings of significance were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors reviewed Unit 2 design change package (DCP) N2-99-032, "Gaseous Effluent Monitoring System Replacement." The purpose of this modification was to replace an aging system for which system reliability had been degrading. The inspectors assessed the adequacy of the modification package and procedural changes, verified that applicable design and licensing basis requirements were met, and verified that design margins were not degraded by the modification.

The inspectors reviewed Unit 1 DCP N1-08-013, "Replace Control Rod Drive (CRD) Timing Recorders at NMP1." The purpose of this modification was to improve the process by which data is acquired and analyzed for all control rod movement. The inspectors assessed the adequacy of the modification package and 10 CFR Part 50.59 screening, verified that applicable design and licensing basis requirements were met, and verified that design margins were not degraded by the modification. The inspectors interviewed engineers involved with the project, walked down the system, and reviewed the post-

Enclosure

maintenance test (PMT) results to verify proper installation and the test acceptance criteria had been met. The inspectors also reviewed the affected procedures and drawings to verify that affected documents were being updated.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19 - Seven samples)

a. Inspection Scope

The inspectors reviewed the PMTs listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with information in the applicable licensing basis and/or DBDs, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data, to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Unit 1, WO 08-11429-00 that replaced capacitors in uninterruptable power supply UPS-162A. The PMT was performed in accordance with N1-EPM-UPS-003, "UPS 10 Year Maintenance," and a 24-hour confidence run.
- Unit 1, WO 08-13901-00 that replaced the EDG 103 raw water pump. The PMT was performed in accordance with N1-ST-Q25, "EDG Cooling Water Quarterly Test," and N1-PM-V2, "Pump Curve Validation Test."
- Unit 1, WO 08-09002-00 that rebuilt the 112 core spray topping pump. The PMT was performed in accordance with N1-ST-Q1C, "Core Spray 112 Pump and Valve Operability Test," and N1-PM-V2, "Pump Curve Validation Test."
- Unit 1, WO 06-20738-00 that performed preventive maintenance on stack off-gas radiation monitor, RAM-112-08A. The PMT was performed in accordance with N1-ISP-112-001, "Stack Gas Monitor Calibration."
- Unit 2, ACR 08-04217 that performed troubleshooting of the Division 2 EDG overspeed butterfly valve limit switch failure. The PMT was performed in accordance with N2-OSP-EGS-M@001, "Diesel Generator and Diesel Air Start Valve Operability Test - Division I and II."
- Unit 2, ACR 08-04603 that performed troubleshooting of the Division 3 EDG voltage regulator motor operated potentiometer. The PMT was performed in accordance with N2-OP-100B, "HPCS Diesel Generator."
- Unit 2, WO 06-13888-00 that rebuilt service water pump 2SWP*P1D. The PMT was

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performed in accordance with N2-OSP-SWP-@001, "Service Water Pump Curve Validation Test."

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - Eight samples)

a. Inspection Scope

The inspectors witnessed performance of and/or reviewed test data for risk-significant surveillance tests to assess whether the components and systems tested satisfied design and licensing basis requirements. The inspectors verified that test acceptance criteria were clear, demonstrated operational readiness and were consistent with the DBDs; that test instrumentation had current calibrations and the range and accuracy for the application; and that tests were performed, as written, with applicable prerequisites satisfied. Upon test completion, the inspectors verified that equipment was returned to the status specified to perform its safety function.

The following surveillance tests were reviewed:

- N1-ST-Q2, "Control Rod Drive Pumps Flow Rate Test;"
- N1-ST-Q13, "Emergency Service Water Pump Operability Test;"
- N1-ST-M4A, "EDG 102 and PB 102 Operability Test;"
- N1-ST-Q6A, "Containment Spray System Loop 111 Quarterly Operability Test;"
- N2-PM-A006, "B.5.b Pump Annual Flow Rate Test;"
- N2-OSP-ICS-Q@002, "RCIC Pump and Valve Operability Test and System Integrity Test and ASME XI Functional Test;"
- N2-OSP-SWP-Q@001, "Division 1 SW Operability Test;" and
- N2-TSP-HVC-R@001, "Testing and Analysis of Unit 2 Control Room Outdoor Air Special Filter Train System."

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness**1EP2 Alert and Notification System Evaluation (71114.02 - One sample)****a. Inspection Scope**

An onsite review was conducted to assess the maintenance and testing of the NMPNS alert and notification system (ANS), including both the system sirens and tone alert radios. During this inspection, the inspectors interviewed emergency preparedness (EP) staff responsible for implementation of the ANS testing and maintenance. The inspectors reviewed CRs pertaining to the ANS for causes, trends, and NMPNS's corrective actions. The inspectors further discussed the ANS with the assigned technical specialist, reviewing system performance from June 2006 through June 2008. The inspectors reviewed the ANS procedures and the ANS design report to ensure NMPNS's compliance with those commitments for system maintenance and testing. Additionally, the inspectors reviewed changes to the design report and how these changes were captured. The Planning Standard, 10 CFR Part 50.47(b)(5), and the related requirements of 10 CFR Part 50, Appendix E, were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03 - One sample)**a. Inspection Scope**

The inspectors conducted a review of the NMPNS emergency response organization (ERO) augmentation staffing requirements and the process for notifying and augmenting the ERO. This was performed to ensure the readiness of key staff for responding to an event and to ensure timely facility activation. The inspectors reviewed procedures and CRs associated with the ERO notification system and drills, and reviewed records from call-in drills. The inspectors interviewed personnel responsible for testing the ERO augmentation process, and reviewed the training records for a sampling of ERO to ensure training and qualifications were up to date. The inspectors reviewed procedures for ERO administration and training, and verified a sampling of ERO participation in exercises and drills in 2007 and 2008. The Planning Standard, 10 CFR Part 50.47(b)(2) and related requirements of 10 CFR Part 50, Appendix E, were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 - One sample)

a. Inspection Scope

Prior to this inspection, the NRC had received and acknowledged changes made to the NMPNS emergency plan and its implementing procedures. NMPNS developed these changes in accordance with 10 CFR Part 50.54(q), and determined that the changes did not result in a decrease in effectiveness of the NMPNS Site Emergency Plan (the Plan). NMPNS also determined that the Plan continued to meet the requirements of 10 CFR Part 50.47(b) and Appendix E to 10 CFR Part 50. During this inspection, the inspectors conducted a review of NMPNS's 10 CFR Part 50.54(q) screenings for all the changes made to the emergency action levels (EALs) and all of the changes made to the Plan from August 2007 through June 2008 that could have potentially resulted in a decrease in effectiveness of the Plan. This review of the EALs and Plan changes did not constitute NRC approval of the changes and, as such, the changes remain subject to future NRC inspection. The requirements in 10 CFR Part 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses (71114.05 - One sample)

a. Inspection Scope

The inspectors reviewed a sampling of self-assessment procedures and reports to assess NMPNS's ability to evaluate their EP performance and programs. The inspectors reviewed a sampling of CRs from January 2007 through June 2008 initiated by NMPNS concerning drills, self-assessments, and audits. Additionally, the inspectors reviewed: EP Oversight Board meeting minutes; Quality and Performance Assurance reports; event reports for the September 2007 Alert and the May 2008 Unusual Event declarations at NMPNS; and the 2007 50.54(t) audit report. The Planning Standard, 10 CFR Part 50.47(b)(14), and the related requirements of 10 CFR Part 50, Appendix E, were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - One sample)

a. Inspection Scope

The inspectors observed control room operator emergency plan response actions during the Unit 2 evaluated LORT scenario on September 5, 2008. The inspectors verified that emergency classification declarations and notifications were completed in accordance with

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10 CFR Part 50.72, 10 CFR Part 50 Appendix E, and the emergency implementing procedures.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01 - Six samples)

a. Inspection Scope

The inspectors reviewed radiation work permits for airborne radioactivity areas with the potential for individual worker internal exposures of greater than 50 millirem (mrem) committed effective dose equivalent (20 derived air concentration (DAC)-hours). For these selected airborne radioactive material areas, the inspectors verified barrier integrity and engineering controls performance (e.g., high efficiency particulate air ventilation system operation).

The inspectors reviewed and assessed the adequacy of NMPNS's internal dose assessment for any actual internal exposure greater than 50 mrem committed effective dose equivalent.

The inspectors examined NMPNS's physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within the spent fuel pools.

The inspectors discussed with the acting radiation protection manager high dose rate-high radiation area, and very high radiation area controls and procedures. The inspectors focused on any procedural changes since the last inspection. The inspectors verified that any changes to NMPNS's procedures did not substantially reduce the effectiveness and level of worker protection.

The inspectors discussed with health physics supervisors the controls in place for special areas that have the potential to become very high radiation areas during certain plant operations. The inspectors determined if these plant operations required communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post and control the radiation hazards.

The inspectors verified adequate posting and locking of all entrances to high dose rate-high radiation areas, and very high radiation areas.

The inspectors evaluated NMPNS's performance against the requirements contained in 10 CFR Part 20, Unit 1 TS 6.7, and Unit 2 TS 6.12.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - Four samples)

a. Inspection Scope

The inspectors reviewed the results of the Spring 2008 Unit 2 refueling outage (2RFO11), including the causes of any radiologically significant work (greater than five person-rem collective exposure) which exceeded its dose estimate.

The inspectors obtained from NMPNS a list of work activities ranked by actual/estimated exposure that are in progress or that have been completed during the last outage and selected the two work activities of highest exposure significance.

The inspectors reviewed the as low as reasonably achievable (ALARA) work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined if NMPNS had established procedures, engineering and work controls, based on sound radiation protection principles to achieve occupational exposures that were ALARA. The inspectors determined if NMPNS had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in NMPNS's ALARA planning for these work activities.

The inspectors reviewed the assumptions and basis for the current annual collective exposure estimate. The inspectors reviewed applicable procedures to determine the methodology for estimating work activity-specific exposures and the intended dose outcome. The inspectors evaluated both dose rate and man-hour estimates for reasonable accuracy.

The inspectors reviewed NMPNS's method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work are encountered. The inspectors determined if adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles or just adjusted to account for failures to control the work.

The inspectors evaluated NMPNS's performance against the requirements contained in 10 CFR Part 20.1101.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 - One sample)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify applicable radiation monitors associated with transient high and very high radiation areas including those used in remote emergency assessment.

The inspectors evaluated NMPNS's performance against the requirements contained in 10 CFR Part 20.1501, 10 CFR Part 20.1703 and 10 CFR Part 20.1704.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151 - Seven samples)

a. Inspection Scope

The inspectors sampled NMPNS submittals for the performance indicators (PIs) listed below. To verify the accuracy of the PI data reported during that period, the PI definition guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used to verify the basis in reporting for each data element.

Cornerstone: Initiating Events

The inspectors reviewed licensee event reports (LERs) and operator logs to determine whether NMPNS accurately reported the number of unplanned power changes greater than 20 percent at Unit 1 and Unit 2 from October 2007 to June 2008.

- Unit 1 unplanned power changes per 7000 critical hours
- Unit 2 unplanned power changes per 7000 critical hours

Cornerstone: Mitigating Systems

Unit 1 and Unit 2 LERs issued between the end of the third quarter 2007 and the end of the second quarter 2008 were reviewed for safety system functional failures.

- Unit 1 safety system functional failures
- Unit 2 safety system functional failures

Cornerstone: Emergency Preparedness

The inspectors reviewed data for the EP PIs which are: drill and exercise performance; ERO Drill Participation; and ANS Reliability. The inspectors reviewed the PI data, its supporting documentation, and the information NMPNS reported for the third and fourth quarters of 2007, and the first and second quarters of 2008, to verify the accuracy of the reported data. The acceptance criteria used for the review were 10 CFR Part 50.9 and NEI 99-02.

Additionally, the inspectors performed NRC Temporary Instruction (TI) 2515/175, ensured the completeness of NMPNS's completed Attachment 1 from the TI, and forwarded that data to NRC Headquarters.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 - Two samples)

.1 Review of Items Entered into the CAP

a. Inspection Scope

As specified by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into NMPNS's CAP. In accordance with the baseline inspection procedures, the inspectors also identified selected CAP items across the initiating events, mitigating systems, and barrier integrity cornerstones for additional follow-up and review. The inspectors assessed the threshold for problem identification, the adequacy of the cause analyses, extent of condition review, operability determinations, and the timeliness of the specified corrective actions.

b. Findings

No findings of significance were identified.

.2 Annual Sample - Review of Corrective Actions for Unit 1 Feedwater Heater Issues

a. Inspection Scope

This inspection focused on NMPNS's problem identification, evaluation, and resolution of a Unit 1 level control valve (LCV)-26-09 actuator o-ring issue associated with the 122 FWH. On September 15, 2007, the 122 FWH tripped on high-high level when LCV-26-09 failed in the closed position and caused a cascading affect that backed up the water flow to the other FWHs in the heater string. The 121 through 124 FWHs tripped due to high-high level within 30 minutes, and the last FWH in the heater string (125) tripped several

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hours later. This caused operators to reduce reactor power to less than 80 percent and produced significant water-hammer in the FWH system piping. Following this event, operators initiated a condition report (CR 2007-5475) to resolve the issue. NMPNS performed corrective maintenance on the valve actuator o-ring and repaired damaged piping and supports on the 12 heater string prior to returning the system to service.

The inspectors selected the FWH issue for review because it resulted in an unplanned reactivity change and power reduction, caused significant water-hammer in the system, and challenged plant operators. The inspectors reviewed NMPNS's associated troubleshooting results, root cause evaluation, extent of condition review, and short-term and long-term corrective actions. The inspectors conducted a walkdown of accessible portions of the system, and reviewed the material condition of the LCVs, design control measures, and configuration control. The inspectors also interviewed plant personnel and reviewed procedures, related industry operating experience (OE), and the vendor manual for the FWH LCV actuators. In addition, the inspectors reviewed the NMPNS TS and UFSAR to ensure that NMPNS operated and maintained the FWH system as required.

b. Assessment and Observations

No findings of significance were identified. NMPNS used a failure modes and effects analysis in the root cause evaluation to determine the nature of the LCV malfunction. The root cause evaluation determined that the lubricant used in the actuator degraded to the point where it caused the actuator o-rings to harden, thereby allowing air to leak past the actuating piston. This caused insufficient air pressure to the valve actuator such that it would not open the LCV on a demand signal. The inspectors determined that NMPNS performed a thorough review of the issue and implemented appropriate corrective actions. The corrective actions were aligned with the root cause analysis and included procedure and preventive maintenance revisions, implementing the use of a new lubricant, improved training to operators and engineering personnel on water-hammer mechanisms, and operating experience program improvements. The inspectors concluded that NMPNS had taken appropriate action in accordance with station procedures and the CAP. The inspectors also determined that the root cause evaluation and subsequent follow-up corrective maintenance were generally sufficient and based on the best available information, troubleshooting, and relevant industry OE. In general, NMPNS's assigned corrective actions were adequately tracked, appropriately documented, and completed as scheduled.

.3 Annual Sample - Review of Corrective Actions for Inadvertent Carbon Dioxide (CO₂) Discharge

a. Inspection Scope

The inspectors reviewed NMPNS's evaluation and corrective actions associated with the September 19, 2007 inadvertent discharge of CO₂ from the fixed CO₂ fire suppression system in the Unit 2 HPCS switchgear room (CR 2007-5538). The event occurred during an installation of wiring in a local fire panel as part of a design change, and resulted in NMPNS declaring an Alert at Unit 2. The inspectors reviewed NMPNS's root cause analysis and corrective actions to ensure that appropriate evaluations were performed and

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corrective actions were specified and prioritized. The inspectors also reviewed the follow-up actions to verify that the root cause and corrective actions identified were addressed.

b. Findings & Observations

No findings of significance were identified. The inspectors determined that, in general, the corrective actions taken associated with the inadvertent CO₂ discharge were reasonable and adequate.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 - Three samples)

.1 (Closed) LER 05000220/2008-001-00, Loss of Offsite Power due to an Equipment Malfunction

On May 13, 2008, a loss of Unit 1 offsite power occurred due to an offsite equipment failure which caused a loss of 115 kV offsite power line 4 while the remaining 115 kV offsite power line (line 1) was removed from service for planned maintenance. The event detailed in this LER was discussed in Section 4OA3 of Inspection Report 05000220/2008003. The inspectors reviewed this LER and no findings of significance were identified. This LER is closed.

.2 (Closed) LER 05000410/2008-001-00, Unqualified Relays Installed Since Original Construction Result in an Unanalyzed Condition

On April 10, 2008, NMPNS discovered that the J10 alarm relays in RB ventilation system unit cooler motor starter circuits did not satisfy the environmental qualification requirements of 10 CFR 50.49. This discovery came as a result of investigation of the cause of J10 relay failures during loss of offsite power testing that was performed during the 2008 refueling outage. J10 relay failures resulted in an NCV as documented in Section 1R22 of Inspection Report 05000410/2008003. The inspectors reviewed this LER and no additional findings of significance were identified. The failure of the J10 relays to meet the environmental qualification requirements of 10 CFR 50.49 constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC Enforcement Policy. NMPNS entered the issues associated with this event into its CAP as CR 2008-2976. This LER is closed.

.3 Power Reduction due to a Maintenance-Related Electrical Transient

a. Inspection Scope

On July 14 at 1:12 p.m., Unit 2 experienced a partial loss of feedwater heating due to loss of extraction steam to the 6B (high pressure) and 5C (low pressure) FWHs. The cause of the event was an unrelated maintenance activity that unexpectedly produced an electrical transient which affected a number of plant systems. Other consequences of the transient were loss of the 'A' and 'C' heater drain pumps, loss of the 'B' offgas train, loss of normal RB ventilation which resulted in automatic isolation of the RB and start of the standby gas treatment system, and isolation of the hydrogen water chemistry system.

Operators responded in accordance with N2-SOP-08, "Unplanned Power Changes," and N2-SOP-101D, "Rapid Power Reduction," to lower reactor power to 73 percent. After the cause of the transient was identified, operators commenced recovery of the FWHs. While attempting to restore the 5C FWH to service, resultant system perturbations caused an isolation of the 6C FWH. With two high pressure FWHs (6B and 6C) out of service, N2-SOP-08 directed that an orderly plant shutdown be commenced. Operators resumed power reduction until, at 50 percent power, the 6B FWH was successfully returned to service. The plant shutdown was terminated and power ascension commenced in coordination with restoration of the remaining affected systems. Power was restored to full RTP on July 15.

The inspectors responded to the control room and observed operators' responses to the event, and reviewed the circumstances surrounding the event.

b. Findings

Introduction. A self-revealing Green finding was identified on July 14, 2008, when inadequate maintenance practices, during replacement and troubleshooting of a Unit 2 radioactive waste sump pump, caused an electrical transient that resulted in the loss of numerous plant components and required a power reduction.

Description. In May of 2008, radioactive waste sump pump 2DFW-P1A was replaced using a new model pump. The WO required that a rotation check be performed after the electrical terminations had been completed. This, however, was not done because the need for it was not recognized until after the pump had been installed in the sump. Although work was stopped to determine a course of action, the pump remained available for automatic operation as the backup sump pump. On July 8, 2008, it was recognized that the pump had run several times since the work had been stopped, as indicated by the pump run chart. This was incorrectly used to verify proper pump operation, and the rotation check and PMT steps in the WO were signed off as complete.

On July 9, 2DFW-P1A was discovered to be running with no discharge pressure. In developing a troubleshooting plan, NMPNS initial actions were to reverse power leads to the pump. During testing the pump had no discharge pressure and, after two minutes, tripped on thermal overload. The leads were returned to the original configuration, and the pump was again energized by closing its circuit breaker on motor control center (MCC) 2NHS-MCC016. Shortly after the breaker was shut, noise was heard and flame was observed coming from the breaker cubicle. The feeder breaker from power board 2NSH-US9 to 2NHS-MCC016 tripped; however, the undervoltage transient to 2NSH-US9, caused by this failure (a short), resulted in the equipment losses discussed above.

In response to this event, the fire brigade responded to a fire alarm in the vicinity of 2NHS-MCC016. They found no fire and observed the damaged breaker for 2DFW-P1A. Operators responded to the partial loss of feedwater heating by reducing power to 73 percent. This issue was entered into the CAP as CR 2008-5745.

The cause of the event was that the pump suction and discharge were plugged with debris from the sump, which resulted in high motor current due to the pump being in a bound

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rotor condition. This, combined with a manufacturing defect associated with wiring insulation in the breaker, resulted in a phase-to-ground short between the breaker and the motor control center.

The performance deficiency associated with this event was inadequate maintenance practices. Specifically: Following replacement in May, the pump was left in a condition such that it would operate automatically prior to the performance of PMT; and, the PMT was signed off based on pump run time rather than a verification of pump flow rate. NMPNS procedure GAP-SAT-02, "Pre/Post-Maintenance Test Requirements," Revision 27, states that the PMT shall check components that were affected by the maintenance, verify that maintenance was properly performed, and verify that a new deficiency was not created. Had PMT been performed at the time of installation, low flow would likely have shown that the pump discharge piping was already plugged with sump debris. This would have prevented continued use of the pump and prevented subsequent troubleshooting from focusing on the direction of motor rotation. Additionally: The troubleshooting plan was inadequate in that, even if the pump had been rotating backwards, it would have developed some discharge pressure; and, after the phase reversal had produced no change in pump performance, the motor was restored to its original configuration and tested, rather than to have reevaluated the troubleshooting plan. Constellation procedure CNG-MN-1.01-1002, "Troubleshooting," Revision 0001, requires that troubleshooting shall be stopped in the event of an unexpected equipment response, and that the troubleshooting plan shall be reevaluated accordingly.

Analysis. The finding was greater than minor because it was similar to IMC 0612, Appendix E, example 4.b, in that the inadequate maintenance resulted in a plant transient that affected multiple systems and components. The finding affected the human performance attribute of the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was evaluated in accordance with IMC 0609, Attachment 4, and determined to be of very low safety significance (Green) per the SDP Phase one determination because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available, and did not screen as potentially risk significant due to external events.

The finding had a cross-cutting aspect in the area of human performance because NMPNS did not appropriately plan the pump troubleshooting activity by incorporating abort criteria (H.3.a per IMC 0305).

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance issue because it occurred on non safety-class balance of plant equipment. **(FIN 05000410/2008004-02, Inadequate Maintenance Practices Result in a Plant Transient)**

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with NMPNS's security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Keith Polson and other members of NMPNS management on October 24, 2008. NMPNS acknowledged that no proprietary information was involved.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Belcher, Plant Manager
 W. Byrne, Manager, Nuclear Security
 R. Dean, Director, Quality and Performance Assessment
 T. Inc, I&C Technician
 J. Kaminski, Manager, Emergency Preparedness
 J. Krakuszeski, Manager, Operations
 J. Laughlin, Manager, Engineering Services
 K. Polson, Vice President
 J. Schultz, Chemistry Supervisor, J.A. FitzPatrick Nuclear Power Plant
 T. Shortell, Manager, Training
 S. Sova, Manager, Radiation Protection
 K. Stoffle, Environmental Support Supervisor
 J. Stone, Chemistry Technician
 T. Syrell, Director, Licensing

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000410/2008004-01	NCV	Incorrect Risk Assessment for RCIC Unavailability (Section 1R13)
05000410/2008004-02	FIN	Inadequate Maintenance Practices Result in a Plant Transient (Section 4OA3)

Closed

05000220/2008-001-00	LER	Loss of Offsite Power due to an Equipment Malfunction (Section 4OA3)
05000410/2008-001-00	LER	Unqualified Relays Installed Since Original Construction Result in an Unanalyzed Condition (Section 4OA3)

Discussed

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

S-ODP-OPS-0112, "Offsite Power Operations and Interface," Revision 12
N1-SOP-33A.3, "Major 115 KV Grid Disturbances," Revision 01
N2-SOP-70, "Major Grid Disturbances," Revision 01
EPIP-EPP-26, "Natural Hazard Preparation and Recovery," Revision 01
N1-OP-64, "Meteorological Monitoring," Revision 01
N2-OP-102, "Meteorological Monitoring," Revision 04

Section 1R04: Equipment Alignment

N2-ELU-01, "Walkdown Order Electrical Lineup and Breaker Operations," Revision 00
N1-OP-18, "Service Water System," Revision 02
SDBD-502, "Service Water System Design Basis Document," Revision 07
N1-ST-Q13, "Emergency Service Water Pump Operability Test," Revision 11
N1-ST-V14, Service Water Check Valve And Emergency Service Water Pump and Check Valve Test," Revision 03
N2-OP-33, "High Pressure Core Spray System," Revision 07
N2-VLU-01, "Walkdown Order Valve Lineup and Valve Operations," Attachment 33, "N2-OP-33 Walkdown Valve Lineup," Revision 00
Piping and Instrumentation Diagram (P&ID)-33, "High Pressure Core Spray System"

Section 1R05: Fire Protection

NMPNS Unit 1 UFSAR, Appendix 10A, "Fire Hazards Analysis"
NMPNS Unit 2 UFSAR, Appendix 9A, "Degree of Compliance with Branch Technical Position CMEB 9.5-1"
NMPNS Unit 2 UFSAR, Appendix 9B, "Safe Shutdown Evaluation"
N2-FPI-PFP-0201, "Unit 2 Pre-Fire Plans," Revision 0

Section 1R06: Flood Protection Measures

Internal Flooding Analysis Notebook, Nine Mile Point Unit 1, Revision 00
Nine Mile Point Nuclear Station - Unit 1 Individual Plant Examination, July 1993
N1-PM-V-29, "Reactor Building Sump Pump System Operability Test," Revision 00
CR 2006-5956
ACR 06-06589

Section 1R07: Heat Sink Performance

S15-79-HTX03, "Replacement Emergency Diesel Generator Raw Water Heat Exchanger Design," Revision 00
S15-79-HTX-01, "Emergency Diesel Generator Cooling Water (EDGCW) Heat Exchanger Thermal Performance Evaluation," Revision 00, Disposition 00A

Section 1R11: Licensed Operator Regualification Program

N1-SOP-32, "Generator Auxiliaries Failures," Revision 02
N1-SOP-33A.1, "Loss of 115 KV," Revision 01
N1-SOP-33A.3, "Major 115 KV Grid Disturbances," Revision 01
N1-EOP-2, "RPV Control," Revision 01400
N1-EOP-4, "Primary Containment Control," Revision 01400
N2-SOP-60, "Loss of Drywell Cooling," Revision 04
N2-SOP-03, "Loss of AC Power," Revision 08
N2-SOP-06, "Feed Water Failures," Revision 04
N2-SOP-101D, "Rapid Power Reduction," Revision 05
N2-SOP-29, "Sudden Reduction in Core Flow," Revision 07
N2-SOP-101C, "Reactor Scram," Revision 03
N2-EOP-RPV, "RPV Control," Revision 11
N2-EOP-PC, "Primary Containment Control," Revision 12
N2-EOP-C4, "RPV Flooding," Revision 12

Section 1R12: Maintenance Effectiveness

S-MRM-REL-0101, "Maintenance Rule," Revision 18
S-MRM-REL-0104, "Maintenance Rule Scope," Revision 01
S-MRM-REL-0105, "Maintenance Rule Performance Criteria," Revision 01
Control Room HVAC System Health Reports, Q3-2006 through Q2-2008
N2-TSP-HVC-R@001, "Testing and Analysis of Unit 2 Control Room Outdoor Air Special Filter Train System," Revision 01
Reactor Recirculation System Health Reports, Q4-2007 through Q3-2008
T-1792, "In-Place Testing of Nuclear Air Cleaning Systems for Nine Mile Point 2"
Unit 2 Maintenance Rule Scoping Document
ASCR 08-04282

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

GAP-OPS-117, "Integrated Risk Management," Revision 14
GAP-PSH-03, "Control of On-line Work Activities," Revision 15
NAI-PSH-03, "On-line Work Management Process," Revision 11

Section 1R15: Operability Evaluations

CNG-OP-1.01-1002, "Conduct of Operability Determinations / Functionality Assessments," Revision 00
A10.1-N-341, "Revise SWP Pump IST Test Performance Flow Criteria from 9000 GPM to 10,000 GPM," Revision 00, Disposition 00H
N2-OSP-SWP-@001, "SW Pump Curve Validation Test," Revision 04

Section R18: Plant Modifications

N1-MFT-105, "Replace CRD Timing Recorders," Revision 01
C-22030-C, "Elementary Diagram Reactor Manual Control System," Sheet 1, Revision 33
ESR 08-00812, "Raise 2SWP-TE-01 Setpoint to 150F for 2SWP*P1D"
10 CFR Part 50.59 Applicability Determination Form for ESR 08-00812
EC20080016-000, "Provide Alternate Power to the Main Step-Up Transformer 2MTX-XM1B
Second Stage Cooling Pump and Fans," Revision 0000
08-15377-00, "Implement Temp Mod to Provide to Cooling Bank Two from Transformer 1D"
10 CFR 50.59 Screening Form for EC20080016-000

Section 1R19: Post Maintenance Testing

GAP-SAT-02, "Pre/Post Maintenance Test Requirements," Revision 26
MDC-11, "Pump Curves and Acceptance Criteria," Revision 14
S15-72-F003, "IST Approved Pump Curves Emergency Diesel Generator Cooling Water,"
Revision 08
N1-MMP-079-119, "Diesel Generator Cooling Water Pumps Maintenance," Revision 02
S-TTP-PUMP-@001, "Generic Pump Curve Validation Procedure," Revision 00
N2-OSP-SWP-@001, "Service Water Pump Curve Validation Test," Revision 04
A10.1-N-341, "Revise SWP Pump IST Test Performance Flow Criteria From 9,000 to 10,000
GPM," Revision 00, Disposition 00H
N2-OSP-EGS-M@001, "Diesel Generator and Diesel Air Start Valve Operability Test - Division I
and II," Revision 05
N2-OP-100B, "HPCS Diesel Generator," Revision 08

Section 1R22: Surveillance Testing

CNG-HU-1.01, "Human Performance Program," Revision 01
CNG-HU-1.01-1000, "Human Performance," Revision 02
CNG-HU-1.01-1001, "Human Performance Tools and Verification Practices," Revision 02
CNG-HU-1.01-1002, "Pre-Job Briefings and Post-Job Critiques," Revision 02
GAP-SAT-01, "ST Program," Revision 16
GAP-OPS-117, "Integrated Risk Management," Revision 14

Section 1EP2: Alert and Notification System Evaluation

Wyle Research Report WR 82-26, "Qualification of the Oswego County Prompt Notification
System for Nine Mile Point and James A. Fitzpatrick Nuclear Power Plants,"
August 1982
Wyle Research Report WR 84-22, "Evaluation of the Oswego County Prompt Notification
System," June 1984
Public Notification System Service Manual, Federal Signal Corporation Engineered Systems
NMPNS EPIP-EPP-30, "Prompt Notification System Problem Response," Revision 08
NMPNS EPMP-EPP-01, "Maintenance of Emergency Preparedness," Revision 24
NMPNS EPMP-EPP-08, "Maintenance, Testing and Operation of the Oswego County Prompt
Notification System," Revision 14
All siren and tone alert radio CRs dated between July 2006 and June 2008

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

NMPNS Site Emergency Plan, Revision 54, Section 5, "Organization Control of Emergencies"
NMPNS EPIP-EPP-13, "Emergency Response Facilities Activation and Operation," Revision 19
NMPNS EPMP-EPP-01, "Maintenance of Emergency Preparedness," Revision 24
NMPNS EPMP-EPP-06, "Emergency Response Organization Notification Maintenance and Surveillance," Revision 15
NMPNS GAP-OPS-01, "Administration of Operations," Revision 49
Nine Mile Point Emergency Response Organization Duty Roster, Revision 2008-11
NMPNS Training Server Emergency Preparedness Job Matrices
Report, "Nine Mile Point Off-Hours Un-Announced All-Report Drill," October 12, 2007
CR 2008-5135

Section 1EP4: Emergency Action Level and Emergency Plan Changes

NMPNS Site Emergency Plan, Revision 54
Licensing Document Change Request S-06-SEP-004 for Emergency Plan Revision 54
NRC Safety Evaluation for NMPNS Site Emergency Plan Revision 54
Change Packages for NMPNS Unit 1 EAL Revisions 16, 17, 18, and 19
Change Package for NMPNS Unit 2 EAL Revision 15
NMPNS EPMP-EPP-01, "Maintenance of Emergency Preparedness," Revision 24,
Attachment 3, "10CFR50.54(Q) Evaluation and Effectiveness Review"
CR 2007-7349
10CFR50.54(q) screenings and reviews, dated between August 2007 and June 2008

Section 1EP5: Correction of Emergency Preparedness Weaknesses

CNG-QL-101-1004, "Quality Audit Process," Revision 01
October 2007 Report of Audit EPP-07-01-N, Emergency Preparedness Program (10CFR50.54t Report)
NMPNS Quality and Performance Assurance Assessment Reports:
07-037, "ERO Staffing"
07-054, "Observation of the June 7, 2007, EP Drill"
07-068, "Observation of the NRC Graded EP Exercise and Follow-up Activities"
08-005, "Use of Corrective Action Process in EP"
08-006, "EAL Review"
08-023, "Observation the of March 4, 2008, Drill"
08-058, "Technical Support Center Focus Area Drills"
08-064, "Observation of the June 26, 2008, Drill"
EP Oversight Board Minutes (various dates)
NMPNS Report for the September 19, 2007, Alert
NMPNS Report for the May 13, 2008, Unusual Event
Condition Report Summary for all EP-related CRs dated between July 2007 and June 2008

Section 1EP6: Drill Evaluation

EPIP-EPP-01, "Classification of Emergency Conditions at Unit 1," Revision 17
 EPIP-EPP-20, "Emergency Notifications," Revision 18

Section 2OS2: ALARA Planning and Controls

NMP Unit 2 RFO11 Radiation Protection Post-Outage Report

Section 4OA1: Performance Indicator Verification

NMPNS EPMP-EPP-05, "Emergency Planning Program Self-Assessment," Revision 15
 Drill and Exercise Performance EP PI data, July 2007 - June 2008
 ERO Drill Participation PI data, July 2007 - June 2008
 Public Notification System PI data, July 2007 - June 2008

Section 4OA2: Identification and Resolution of Problems

CNG-CM-1.01-1003, "Design Engineering and Configuration Control", Revision 00001
 N2-ARP-1, Revision 00, Attachment 29
 CNG-MN-1.01-1006, "Oversight of Supplemental Personnel," Revision 00200
 CNG-CM-1.01-2003, "Acceptance of Vendor Engineering Products," Revision 0000
 NIP-CON-01, "Design and Configuration Control Process," Revision 23
 Safety Manual Chapter 20, Attachment 4, "Electrical Safety Checklist"
 WO 07-02412-18

Condition Reports

2008-5827	2008-6588	2007-7070
2008-5692	2008-6513	2008-0126
2008-5824	2008-6834	2008-0253
2008-5738	2008-7259	2008-1678
2008-6947	2004-3751	2008-1698
2008-7083	2006-1498	2008-2208
2008-7092	2006-4548	2008-3501
2008-7222	2006-4845	2008-4031
2008-7172	2006-5063	2008-4422
2008-5028	2006-5133	2008-4453
2008-6946	2006-5523	2008-5449
2008-6879	2006-5758	2008-6946
2008-6894	2007-0359	2008-7365
2008-6787	2007-0542	
2008-6674	2007-0552	
2008-6330	2007-1179	
2008-4021	2007-1198	
2008-6400	2007-5411	
2008-6468	2007-6783	

LIST OF ACRONYMS

AC	alternating current
ADAMS	Agency Documents Access Management System
ALARA	as low as reasonably achievable
ANS	alert and notification system
CAP	corrective action program
CDF	core damage frequency
CFR	Code of Federal Regulations
CO ₂	carbon dioxide
CR	condition report
CRD	control rod drive
DAC	derived air concentration
DBD	design basis document
DC	direct current
DCP	design change package
EAL	emergency action level
EDG	emergency diesel generator
EOP	emergency operating procedure
EP	emergency preparedness
ERO	emergency response organization
ESW	emergency service water
F	Fahrenheit
FWH	feedwater heater
HPCS	high pressure core spray
hr	hour
HVAC	heating, ventilation, and air conditioning
IA	instrument air
ICDP	incremental core damage probability
IMC	inspection manual chapter
kV	kilovolt
LCV	level control valve
LER	licensee event report
LORT	licensed operator requalification training
MCC	motor control center
mrem	millirem
NCV	non-cited violation
NEI	Nuclear Energy Institute
NMPNS	Nine Mile Point Nuclear Station, LLC
NRC	Nuclear Regulatory Commission
OE	operating experience
PARS	Publicly Available Records
PI	performance indicator
PMT	post maintenance test
RB	reactor building
RCIC	reactor core isolation cooling
RHR	residual heat removal

RPV	reactor pressure vessel
RRP	reactor recirculation pump
RTP	rated thermal power
SDP	significance determination process
SOP	special operating procedure
SW	service water
TI	temporary instruction
TS	technical specification
UFSAR	updated final safety analysis report
UPS	uninterruptible power supply
WO	work order
yr	year