U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket/Report Nos.:	50-220/98-05 50-410/98-05
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:	April 12 - May 23, 1998
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ATTACHMENT

EXECUTIVE SUMMARY

Nine Mile Point Units 1 and 2
50-220/98-05 & 50-410/98-05
April 12 - May 23, 1998

This NRC inspection report includes reviews of licensee activities in the functional areas of operations, engineering, maintenance, and plant support. The report covers a six-week period of inspections and reviews by the resident staff and regional specialists in the areas of environmental monitoring and outage radiation protection.

PLANT OPERATIONS

During performance of a Unit 1 surveillance test, the containment spray raw water inter-tie check valve did not open with the required torque and the station shift supervisor (SSS) failed to enter the core spray system TS 3.1.4.d action statement, as required by the surveillance test. The relieving SSS identified the procedural non-compliance and took prompt and appropriate action to comply with the surveillance procedure. The failure to properly implement the surveillance test is a violation of TS 6.8.1. **(VIO 50-220/98-05-01)**

While transferring a double blade guide (DBG) from the spent fuel pool to the reactor vessel, the DBG became disengaged from the grapple and came to rest in the fuel transfer canal. NMPC determined that the root cause was the refueling crew did not properly verify engagement of the grapple. NMPC's root cause investigation was methodical and thorough, the root cause determination was technically sound, and the corrective actions adequately addressed the cause.

MAINTENANCE/SURVEILLANCE

During this inspection period, the NMPC staff self-identified that the TS required service test of the Unit 2 Division I battery was not completed during the previous two refueling outages. NMPC had improperly credited the battery cyclic performance test for satisfying the requirements of the service test. NMPC requested and was granted a Notice of Enforcement Discretion (NOED) to avoid the consequential TS required shutdown. The NOED was exited on May 2, 1998 upon the unit achieving Cold Shutdown conditions and the service test was completed satisfactorily on May 7, 1998. Notwithstanding, the failure to have properly service tested the Division I battery, since April 1995, is a violation of TS 4.8.2.1.d. **(VIO 50-410/98-05-02)**

ENGINEERING

During surveillance testing of the Unit 2 Division II EDG, a fuel leak developed between the fuel filter and the fuel injectors. NMPC determined that the leak was caused by vibration of the fuel supply piping, which caused fretting of the pipe at a pipe support. Subsequent licensee investigation identified notable, but less severe, fretting on the Division I EDG fuel supply piping. The fuel line supports were installed in 1993, but the specific design change to install a protective grommet was not adequately incorporated into the final

design package. This is a violation of 10CFR50, Appendix B, Criterion III, "Design Control." **(VIO 50-410/98-05-03)**

The design and installation of the new ECCS pump suction strainers appeared adequate to ensure sufficient net positive suction head for the pumps in the event of a loss of coolant accident (LOCA).

During a review of Unit 1 operating procedures, NMPC identified that the normally open vent valves on the containment spray raw water heat exchangers violated secondary containment integrity, in that it provided a potential release path from the reactor building to the environment. This licensee identified and corrected violation of secondary containment integrity requirements was not cited.

During a review of the control room emergency ventilation system initiation logic, NMPC determined that the system would not automatically initiate, as required. Specifically, the system would not automatically start as a result of a main steam line break or a loss of coolant accident. This licensee identified and corrected violation of 10CFR50, Appendix B, Criterion XI, "Test Control," was not cited.

The inspectors observed that NMPC's follow-up of the Part 21 report concerning GE SBM-type control switches and their identification of the susceptible switches at Unit 1 was thorough and an example of an improving questioning attitude by the engineering staff.

PLANT SUPPORT

The licensee effectively maintained and implemented the Radiological Environmental Monitoring Program in accordance with regulatory requirements. The licensee performed a comprehensive review of an anomalous indication of Iodine 131 in an environmental milk sample.

Overall, the licensee effectively maintained meteorological monitoring system operability, and satisfactorily performed channel calibrations and channel functional tests for the meteorological instrumentation, with the exception of the wind speed channel. The failure to perform the channel calibration of the wind speed channel according to the channel calibration definition in TS 1.4, in that the accuracy of the entire wind speed channel was not measured from the sensor to the channel output, constitutes a violation of Unit 2 TS 3/4.3.7.3. **(VIO 50-410/98-05-06)**

Housekeeping was adequate in that aisles and walkways were clear and free of debris, radiological boundaries and postings were clear, and access controls to radiologically controlled areas were effective.

Radiological controls for outage work were well planned and health physics personnel maintained close oversight of work.

Procedure S-RPIP-5.4, "Dose Tracking and Timekeeping," lacked clarity with regard to the method for determining the available administrative extremity exposure, and several examples of inaccurate determinations of available administrative extremity exposure were identified.

ALARA goals were effectively used as a tool to aid radiological planning to minimize radiation exposure. Numerous ALARA initiatives including publication of a pre-outage report, use of cameras, use of temporary shielding, planned reactor vessel nozzle hydro washes, and an attempt to chemically decontaminate the reactor recirculation system demonstrated management support and a commitment to maintaining radiation exposures ALARA.

The contractor laboratory continued to implement effective QA/QC programs for the REMP, and continued to provide effective validation of analytical results. The laboratory demonstrated the ability to accommodate and incorporate difficult media and geometries into the program. The programs are capable of ensuring independent checks on the precision and accuracy of the measurements of radioactive material in environmental media.

The DER system and the self-assessment program were effective in their use to identify, evaluate, and resolve radiological program deficiencies.

REPORT DETAILS

Nine Mile Point Units 1 and 2
50-220/98-05 & 50-410/98-05
April 12 - May 23, 1998

SUMMARY OF ACTIVITIES

Niagara Mohawk Power Corporation (NMPC) Activities

Unit 1

Nine Mile Point Unit 1 (Unit 1) started the inspection period at full (100%) power. On April 21, 1998, Unit 1 entered a 7-day Technical Specification (TS) Limiting Condition of Operation (LCO) due to the determination that the control room emergency ventilation system (CREVS) would not automatically initiate as designed (see Section E8.5 of this inspection report). Because the repairs could not be completed before the expiration of the LCO, Unit 1 was shutdown on April 27. Following CREVS modifications, the unit was restarted shortly after the end of the inspection period, and obtained full power on June 1, 1998.

Unit 2

Nine Mile Point Unit 2 (Unit 2) started the inspection period at 91% power, in a coast-down condition as they neared the next refueling outage. On May 2, the unit was shutdown to start the sixth refueling outage (RFO6). The unit remained shutdown through the end of the inspection period.

Nuclear Regulatory Commission (NRC) Staff Activities

Inspection Activities

The NRC resident inspectors conducted inspection activities during normal, backshift, and deep backshift hours. In addition, specialist from Region I conducted inspections in the area of environmental monitoring and outage radiation protection. The results of the inspection activities are contained in the applicable sections of this report.

Updated Final Safety Analysis Report Reviews

While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the Updated Final Safety Analysis Report (UFSAR) related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters.

I. OPERATIONS

O1 Conduct of Operations

O1.1 General Comments (71707)[1]

The resident inspectors conducted frequent reviews of ongoing plant operations to determine if the units were operated safely and in accordance with licensee procedures and regulatory requirements. The reviews included tours of accessible and normally inaccessible 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, and verification that logs and records accurately identified equipment status or deficiencies. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

O1.2 Unit 1 - Failure to Follow Surveillance Test Procedure

a. Inspection Scope (71707)

The inspectors reviewed the circumstances surrounding the failure of Unit 1 to perform actions specified by a surveillance test procedure due to unsatisfactory surveillance test data.

b. Observations and Findings

On April 22, 1998, during performance of NMPC surveillance test Procedure N1-ST-Q28, "Containment Spray Raw Water Inter Tie Check Valve Quarterly Operability Test," check valve 93-64 (containment spray raw water sub-loop 122 to core spray loop 12 testable check valve) failed to open with the required torque. The day-shift station shift supervisor (SSS) was notified of the valve failure at 12:07 p.m.; he entered Unit 1 TS 3.3.7.b, with a 15-day LCO for an inoperable containment spray loop and DER 1-98-0960 was initiated to address the concern.

At 8:43 p.m., the night-shift SSS noted that actions contained in N1-ST-Q28 had not been completed. Note 1 after Step 10.1.1 (Operations Review of the Acceptance Criteria) stated that if check valve 93-64 failed, then loop 12 was to be considered inoperable; subsequently, TS LCO 3.1.4.d needed to be entered, which required a shutdown be initiated within 1 hour and be in a cold shutdown condition within the next 10 hours. Note 2 stated that the LCO could be exited if one of the blocking valves was closed. The SSS directed both blocking valves shut, and

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[1] 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 (TI) that was used as inspection guidance is listed for each applicable report section.

exited LCO 3.1.4.d at 9:20 p.m. The failure to adhere to procedure N1-ST-Q28 is a violation of the Unit 1 TS 6.8.1. **(VIO 50-220/98-05-01)**

The inspectors discussed the check valve failure with the system engineer, who stated that check valve 93-64 appeared to have been hydraulically locked. The system was vented and the valve retested satisfactorily. The system engineer stated that the mechanism for the hydraulic locking would be investigated further.

c. Conclusion

During performance of a Unit 1 surveillance test, the containment spray raw water inter-tie check valve did not open with the required torque and the station shift supervisor (SSS) failed to enter the core spray system TS 3.1.4.d action statement, as required by the surveillance test. The relieving SSS identified the procedural non-compliance and took prompt and appropriate action to comply with the surveillance procedure. The failure to properly implement the surveillance test is a violation of TS 6.8.1. **(VIO 50-220/98-05-01)**

O1.3 Conduct of Unit 2 Core Off-load Operations (60710)

The inspectors observed licensee and contractor, General Electric (GE), conduct of operations during Unit 2 core off-load. The inspectors observed the evolution from the control room, and the refuel floor, during both normal and back shift hours. The inspectors also reviewed applicable procedures and TS to verify licensee compliance.

The inspectors observed operations staff and GE personnel perform fuel movement from the refuel bridge and considered the evolutions well controlled. NMPC and GE personnel exhibited good formal communication, and completed the evolution in accordance with procedures.

Before RFO6, NMPC replaced the triangular refueling mast with a heavier round mast that included an installed camera and monitoring system. The modification required a TS amendment, which was approved by the NRC, via letter dated April 16, 1998. During the off-load evolutions, no concerns were noted with the operation of the new refueling mast. Moreover, the inspectors noted that the installed camera system greatly enhanced the operators' ability to verify fuel bundle serial numbers before grapple engagement.

O1.4 Dropped Double Blade Guide During Unit 2 Off-load Operation

a. Inspection Scope (60710, 93702)

The inspectors reviewed the circumstances surrounding the dropped double blade guide (DBG) during the Unit 2 core off-load. A DBG is used to provide lateral support for fully inserted control rods during off-load conditions; when fuel is in the reactor vessel, control rods are supported laterally by the surrounding fuel bundles. The inspectors assessed the licensee's response to the event, including the

immediate actions, root cause determination, and corrective actions. In addition, the inspectors visually observed the location of the DBG as it rested in the transfer canal, monitored a Station Operating Review Committee (SORC) meeting associated with the event, reviewed the applicable procedure and DER, and discussed related issues with the Senior Reactor Operator (SRO) on the refuel bridge at the time of the event, members of the root cause analysis team, and the Unit 2 Plant Manager.

b. Observations and Findings

On May 19, 1998, while transferring a DBG from the spent fuel pool (SFP) to the reactor vessel, the DBG became disengaged from the grapple and fell onto the fuel transfer canal. The refueling bridge SRO immediately stopped all fuel handling activities and informed the control room of the situation. Management and technical support staff assisted in the evaluation of the situation. An underwater video camera was used to view the grapple and the DBG bail (handle). The grapple was closed and the "engaged" light on the refuel platform control panel was illuminated. The DBG bail handle appeared to be intact with no indication of failure. The licensee issued a DER to record the event and a root cause analysis team was formed. Upon being informed of the event, the inspectors performed a visual inspection of the refuel floor, the SFP and reactor cavity, and considered the DBG to be in a stable condition. NMPC developed a plan and retrieved the DBG. They inspected it for damage, and returned it to its previous location in the SFP.

During NMPC's root cause investigation, the grapple and the DBG handle were measured, inspected and tested to determine how the DBG may have dropped from the grapple. GE, the manufacturer of the grapple, was contacted for assistance. By evaluating the dimensions of the grapple and attempting to duplicate the event, NMPC determined the following as the most probable scenario: When the grapple was brought into position over the DBG, it was slightly mis-oriented such that the DBG bail handle wedged diagonally between the bail handle channel on one side of the grapple shroud and the corner of the shroud on the opposite side. In this position, the grapple was ready to engage the bail handle; however, the mast was approximately one-inch higher then normal for DBG engagement. When the signal was given for the grapple to engage the bail, the middle hook of the grapple traveled to the normal engaged position, but the outside hook came to rest against the bail handle. In this condition, the "engaged" light would not have been illuminated since the necessary contacts within the circuitry would not be closed. The DBG was lifted to the "full-up" position and moved to the fuel transfer canal. To transverse through the fuel transfer canal, the bridge operator rotated the mast 90° to align the DBG with the transfer canal. As the bridge accelerated, the DBG slipped from the single grapple hook; at this time, the "grapple engaged" light illuminated since the grapple hooks would have closed after the DBG fell.

The licensee tested this scenario several times with confirmatory results. All details noted during the tests corresponded to those described by the refueling operators following the event with one exception. During the post event interviews, the fuel handler and spotter stated that the "engaged" light was lit before the DBG was lifted. During the tests, the "engaged" light was never received before the blade

guide lift. Based on the above, the licensee determined that the root cause was that the refueling crew did not properly verify grapple alignment, resulting in a partial engagement of the DBG.

Prior to continuing core off-load, NMPC implemented several corrective and preventive actions, as documented in DER 2-98-1415. The actions included: (1) adding a column to the fuel move sheets to document the receipt of the "grapple engaged" light prior to lifting fuel assemblies or blade guides, and (2) training of the refueling crews on the issues associated with the event. Based on an analysis from GE, NMPC further concluded that physical design differences between the blade guide bail handle and the fuel assembly bail handle would prevent a similar occurrence with a fuel assemble. NMPC completed core off-load on May 23, without further incident.

Based on the inspectors review, NMPC's root cause investigation appeared methodical and thorough, the root cause determination was technically sound, and the corrective actions adequately addressed the cause.

c. Conclusion

While transferring a double blade guide (DBG) from the spent fuel pool to the reactor vessel, the DBG became disengaged from the grapple and came to rest in the fuel transfer canal. NMPC determined that the root cause was the refueling crew did not properly verify engagement of the grapple. NMPC's root cause investigation was methodical and thorough, the root cause determination was technically sound, and the corrective actions adequately addressed the cause.

O8 Miscellaneous Operations Issues

O8.1 (Closed) LER 50-410/98-05: Reactor Water Cleanup Isolation on High Differential Flow Caused by Relief Valve Lifting (92700)

On March 17, 1998, while placing a reactor water cleanup (RWCU) system filter demineralizer in service, Unit 2 experienced an automatic isolation of the system due to high differential flow. The operators verified proper system response, implemented the TS action statements, and wrote a DER to investigate the cause of the system isolation. Subsequently, NMPC identified that the filter demineralizer relief valve lifted, which caused the high differential flow and resulted in the system isolation. The relief valve was disassembled and NMPC determined that the valve disk seating surface was degraded. A new valve was installed. The day of the event, the inspectors discussed the RWCU system isolation with the Unit 2 licensed operators, and verified the appropriate implementation of TS.

During this inspection period, the inspectors discussed the root cause determination with the system engineer and observed the SORC's review of the associated DER and Licensee Event Report (LER) 98-05. No concerns were identified. The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. This LER is closed.

O8.2 (Closed) LER 50-410/98-06: Engineered Safety Feature Actuations Due to Partial Loss of Offsite Power (92700)

The technical issues associated with this LER were reviewed and documented in Section 01.2 of inspection report (IR) 50-410/98-02. However, the LER provided additional information regarding two equipment performance abnormalities that occurred during the loss of Line 5, one of the two 115KV sources of offsite power. Specifically, the Division II hydrogen/oxygen (H_2O_2) sample pump and the Division II cable spreading area unit cooler both tripped during the transient and had to be manually restarted. These components were not expected to trip since Division II was being powered by Line 6, the other 115KV offsite power source. NMPC evaluated the circuits associated with these components and verified that there was no inter-tie with Division I or III power. However, they did identify a loose connection within the control circuitry for each component. Also, the loss of Line 5 caused a transfer of load to Line 6, resulting in a momentary drop in Line 6 voltage. NMPC determined that the loose connections, combined with the voltage drop on Line 6, was sufficient to cause these components to trip. Although loose connections existed, NMPC concluded that the equipment was able to perform the intended design function. The inspectors considered NMPC's conclusion to be technically sound.

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. This LER is closed.

O8.3 (Closed) LER 50-410/98-08: HPCS Out of Service with One Division of RHS in Suppression Pool Cooling

a. Inspection Scope (92700)

The inspectors reviewed the LER, the UFSAR, related DERs, and the NMPC design specification related to the emergency core cooling system (ECCS). In addition, the inspectors discussed the issue with the system engineer and a licensing engineer, and observed a Unit 2 SORC meeting regarding the issue. The inspectors verified the completion of the LER in accordance with 10CFR50.73.

b. Observations, Findings and Conclusions

In March 1998, as a result of operating experience reviews, NMPC initiated a DER to investigate a concern regarding the operability of the residual heat removal system (RHS) while operating in the suppression pool cooling mode. Specifically, as originally designed, the closing time (120 seconds) of the suppression pool cooling valve was slower than the opening time (65 seconds) of the low pressure coolant injection (LPCI) mode injection valve. Therefore, during suppression pool cooling, full LPCI flow would not be available until the suppression pool cooling valve was completely closed. As a result, during suppression pool cooling, the RHS division would be inoperable for the LPCI mode. NMPC reviewed operational history and determined that, based on this scenario, TS requirements had not been exceeded. Afterwards, NMPC determined that during RHS full flow test, the system would also

be inoperable, because the test configuration uses the suppression pool cooling valve.

Licensee review identified that, on January 25, 1996, Unit 2 had operated for twelve minutes with the high pressure core spray (HPCS) system out-of-service at the same time that Division II RHS was in the full flow test configuration. In this configuration, TS 3.0.3 was applicable since no specific TS requirement existed to cover this condition. Based on the information provided in the LER, and a review of the applicable TS, the inspectors concluded that no TS violation had occurred, because the twelve minutes that HPCS and Division II RHS were concurrently inoperable was within the one hour LCO allowed by TS 3.0.3. However, the failure to have adequately reviewed the suitability of the suppression pool cooling/full flow test valve closing time with respect to the LPCI functions of RHS constitutes a violation of minor significance and is not subject to formal enforcement action.

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. This LER is closed.

II. MAINTENANCE [2]

M1 Conduct of Maintenance

M1.1 General Comments (61726, 62707)

The resident inspectors periodically observed plant maintenance activities and the performance of various 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:

- N1-ESP-RPS-331 Reactor Protection System Motor-Generator Set Instrument Channel Test Excluding Output Contractors
- N1-IPM-036-010 Anticipated Transient Without Scram /Alternate Rod Injection Instrument Calibration
- N1-IPM-036-040 Yarway Reactor Level Local Indicator Calibration
- N1-ISP-036-103 Hi/Lo Rx Water Instrument Trip Channel Calibration
- N1-ISP-036-104 Low-Low Rx Water Level Instrument Trip Channel Calibration

[2] Surveillance activities are included under "Maintenance." For example, a section involving surveillance observations might be included as a separate sub-topic under M1, "Conduct of Maintenance."

• N1-ST-V3	Rod Worth Minimizer Operability Test APRM/IRM Overlap Verification
• N2-ESP-BYS-R681	Div I/II/III Battery Service Test
• N2-FHP-13.1	Complete Core Off-load
• N2-MSP-EGS-R02	Diesel Generator Inspection Division 3 (EGS*EG2)
• N2-OSP-EGS-R04	Operating Cycling Diesel Generator Simulated Loss of Offsite Power with ECCS Division I & II
• N2-PM-S001	Refueling Platform and Grapple Inspection
• WO 97-12419-00	N2-MSP-EGS-R002 - Diesel Generator Inspection - Div. III (18 month, 6 & 12 year Requirements)
• WO 97-16778-01	Pre-staging Activities to Support ECCS Suction Strainer Modification N2-97-067
• WO 97-16778-03	Remove Existing ECCS Strainer 2CLS*STR1 and Replace with New Strainer
• WO 97-16778-12	Transport of New ECCS Suction Strainers into the Suppression Pool and Removal of Old ECCS Suction Strainers
• WO 98-1192-00	Work Order for N1-ESP-RPS-331
• WO 98-2159/60	Input New Set Points for Control Room Ventilation Radiation Monitor #11/12
• WO 98-2243-02	Relocate Radiation Detector per DDC 1M00571
• WO 98-2211-00	Fabricate & Install Plate for Controls per DDC 1F00460
• WO 98-2211-02	Make Wire Changes to Provide Manual Control to TCV-210.1-56 per 1F0460 Latest Revision
• WO 98-2211-04	Support Ears to Mount Valve Position Indicator, Plate Broken Off
• WO 98-2327-04	Perform MFT for CRAC Mod.(N1-MFT-053)

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) URI 50-220/96-01-03: Inadequate Testing of Unit 1 Control Room Annunciators

a. Inspection Scope (92902)

The inspectors reviewed NMPC's response to a lack of preventive maintenance and calibration of annunciator inputs at Unit 1. The inspectors discussed the disposition of the associated DER with Unit 1 management.

b. Observations, Findings and Conclusion

The inspectors reviewed the disposition of DER 1-96-0148 regarding the January 20, 1996 trip of the Unit 1 #11 reactor feed pump due to a relay failure. The DER addressed the failure of the Agastat relay and associated corrective actions. However, the unresolved item was initiated due to the inspectors' concern that the associated control room annunciator did not alarm, as expected, and to assess the adequacy of periodic control room annunciator testing.

Discussions with the Unit 1 Technical Support Manager and the General Supervisor of Operations revealed that all annunciator inputs are either tested or determined to be not necessary for safe operation. After a licensee review of this concern, the reactor feed pump trip annunciator and a few additional annunciators were found to have been improperly categorized as not necessary for safe operation. The inspectors determined that this oversight of annunciator testing constituted a violation of minor safety significance and is not subject to formal enforcement action.

M8.2 (Closed) URI 50-410/96-10-01: Post-Maintenance Testing of the Unit 2 Main Steam Line Radiation Monitors (92902)

During a review of the post-maintenance testing (PMT) of the Unit 2 main steam line (MSL) radiation monitor, the inspectors noted that the TS required trip signals were cleared to support the PMT. The inspectors questioned the removal of the trip signals while the channel was still inoperable and the LCO action statement was still effective. The licensee stated that the trip signal needed to be cleared to perform the PMT surveillance before the channel could be declared operable. Notwithstanding good justification, the removal of the LCO required trips prior to declaring the MSL radiation monitor operable appeared to be in conflict with Unit 2 TS 3.3.1. NMPC challenged this interpretation of TS 3.3.1 and submitted a letter to the NRC, dated October 21, 1996, requesting a clarification of "... a longstanding [industry] practice that permitted the conduct of TS surveillance testing needed to demonstrate that previously inoperable equipment had been restored to an operable condition."

On November 21, 1996, the NRC responded with the following: "... It is not the intent of TS 3.0.2 to preclude the return to service of a component that has been replaced or repaired when it can reasonably be considered operable except for the completion of surveillance testing to confirm its operability. The NRC staff has addressed this existing ambiguity in TS 3.0.2 by adding TS 3.0.5 to the Standard Technical Specifications for BWR/4, Revision 1. TS 3.0.5 states "... equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment ..."

Based upon the above, NMPC's post-maintenance testing practices are acceptable and there is no violation of regulatory requirements. This unresolved item is closed.

M8.3 (Closed) VIO 50-410/96-10-03: Procedure Changes Not in Accordance with TS Requirements (92902)

In August 1996, during repairs to the Unit 2 control building chillers, a procedure change evaluation (PCE) was processed to change the service water low flow set point. However, the PCE was processed as an editorial change and did not receive the approval of a senior reactor operator, as required by the Unit 2 TS 6.8.3. This was documented on DER 2-96-3284.

The inspectors reviewed the DER disposition and NMPC's response to the Notice of Violation. Corrective actions included revising the common site procedure which controls PCEs (NIP-PRO-04) to clarify and limit what may be considered an editorial change to a procedure. The inspectors have identified no further examples of improperly processed PCEs. This violation is closed.

M8.4 (Closed) VIO 50-410/97-02-02: Missed Unit 2 HPCS Actuation Instrumentation TS Surveillance Test (92702)

In March 1997, NMPC identified that their test procedures failed to satisfy the TS surveillance requirements (TSSR) for response time testing of the HPCS actuation instrumentation. NMPC's letter, dated June 16, 1997, provided the root cause and corrective actions for this violation; much of the same information was also contained in LER 50-410/97-01. The inspectors' review of the immediate corrective actions was detailed in IR 50-410/97-02 and the inspectors' review of the associated LER was documented in IR 50-410/97-04. The inspector determined that the licensee reviewed other ECCS response time tests with no additional deficiencies identified. With respect to actions to prevent recurrence, NMPC credited improvements to their procedure review process as barriers to prevent recurrence. The inspectors reviewed the enhanced administrative control procedures and identified no concerns. This violation is closed.

M8.5 (Closed) LER 50-410/98-09: Missed Battery TSSR Due to Inappropriate Interpretation.

a. Inspection Scope (61726, 92700)

The inspectors reviewed the LER, DER, and applicable TSs, surveillance test procedures and test results, and discussed this issue with responsible individuals. In addition, discussions were held with NRC management and technical staff members from the Region I Office and the Office of Nuclear Reactor Regulations (NRR) with regard to enforcement discretion. Also, the inspectors verified the completion of the LER in accordance with 10CFR50.73.

b. Observations and Findings

On April 17, 1998, NMPC determined that TSSR 4.8.2.1.d for the Division I 125 volt battery had not been met for Unit 2 from April 5, 1995, to the present. Specifically, during RFO4 and RFO5, credit was inappropriately taken for the battery performance test in lieu of the battery service test. Upon identification of the missed surveillance, the Unit 2 SSS declared the Division I battery inoperable. Before initiating the TS required plant shutdown, NMPC notified the NRC and requested enforcement discretion to delay the testing of the battery until RFO6, scheduled to begin May 2, 1998. The NRC verbally granted enforcement discretion from the TS requirements until the next Unit 2 entry into Cold Shutdown, but not later than May 3, 1998. This discretion allowed NMPC to avoid an unnecessary plant shutdown. The enforcement discretion was granted provided that the Division II and III batteries remained operable and the Division I battery cell-to-cell

resistance check were performed weekly. On April 21, 1998, the written Notice of Enforcement Discretion (NOED) was docketed. Notwithstanding, the failure to complete the required Division I battery service test, since April 1995, is a violation of TS 4.8.2.1.d. **(VIO 50-410/98-05-02)**

On May 2, 1998, Unit 2 shutdown for RFO6 and the NOED was exited upon the unit achieving the Cold Shutdown condition. On May 7, NMPC successfully completed the service test on the Division I battery. The inspectors reviewed the test procedure and results, and identified no concerns.

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. This LER is closed.

c. Conclusion

During this inspection period, the NMPC staff self-identified that the TS required service test of the Unit 2 Division I battery was not completed during the previous two refueling outages. NMPC had improperly credited the battery cyclic performance test for satisfying the requirements of the service test. NMPC requested and was granted a Notice of Enforcement Discretion (NOED) to avoid the consequential TS required shutdown. The NOED was exited on May 2, 1998 upon the unit achieving Cold Shutdown conditions and the service test was completed satisfactorily on May 7, 1998. Notwithstanding, the failure to have properly service tested the Division I battery, since April 1995, is a violation of TS 4.8.2.1.d. **(VIO 50-410/98-05-02)**

III. ENGINEERING

E1 Conduct of Engineering

E1.1 General Comments (37551)

The resident inspectors frequently reviewed design and system engineering activities, including justifications for operability determinations, and the support by the engineering organizations to plant activities.

E1.2 Unit 2 Emergency Diesel Generator Fuel Line Leak

a. Inspection Scope (37551)

During a Unit 2 surveillance test of the Division II emergency diesel generator (EDG), a fuel leak developed in the pipe between the fuel filters and the fuel injectors. The inspectors assessed NMPC's actions to address and evaluate the leak. The assessment included a visual inspection of the damaged fuel line and the susceptible location on the other Unit 2 EDGs, and a review of associated DERs, SSS's logs, plant modifications, UFSAR and TS sections, and immediate and long-

term corrective actions. The inspectors discussed issues related to the event with the Unit 2 Plant Manager and members of the Unit 2 system engineering staff.

b. Observations and Findings

On April 14, 1998, during a surveillance test of the Division II EDG, a fuel leak developed in the fuel line pipe between the fuel filters and the fuel injectors. The operators immediately stopped and shutdown the EDG. The SSS declared the EDG inoperable, the appropriate TS LCO was entered, and a DER was initiated to record the event. Upon investigation, NMPC concluded that vibration of the fuel line pipe caused fretting of the piping at the location of a pipe support. NMPC generated a work order to replace the pipe and, after repairs were completed, declared the EDG operable on April 15.

As required by TS, NMPC evaluated the other EDGs for susceptibility to the same failure mechanism. The Division III EDG is of a different design and is not susceptible. However, NMPC identified notable degradation of the fuel line at the same location on the Division I EDG. After close examination, NMPC concluded that the degradation was not significant enough to impact operability. The inspectors discussed the basis for the operability determination with the SSS and the system engineer, and considered it adequate.

On April 18 NMPC replaced the Division I EDG degraded fuel line pipe. Besides replacing the pipe, NMPC evaluated and incorporated a design change to install a rubber grommet between the pipe and the support to prevent recurrence. Subsequently, a similar design change was completed for the Division II EDG pipe support.

Following the event, NMPC evaluated the consequence of the Division II EDG fuel line leak and concluded that based on the size of the leak and the available fuel within the storage tank, the EDG was capable of operating at rated load for seven days, as designed. The resident inspectors and region-based specialists reviewed the evaluation and determined that the licensee's conclusion was acceptable.

NMPC reviewed the history of these fuel lines and revealed that a 1993 design change added the pipe supports to correct previous fuel line leaks. Further investigation revealed that the design package included a rubber grommet at the pipe support, to compensate for system vibration. However, the requirement to install the protective grommet was not adequately incorporated into the final design package. The failure to translate a specific design change to correct an identified design deficiency into the design package is contrary to 10CFR50, Appendix B, Criterion III, "Design Control," and is a violation. **(VIO 50-410/98-05-03)**

c. Conclusion

During surveillance testing of the Unit 2 Division II EDG, a fuel leak developed between the fuel filter and the fuel injectors. NMPC determined that the leak was caused by vibration of the fuel supply piping, which caused fretting of the pipe at a

pipe support. Subsequent licensee investigation identified notable, but less severe, fretting on the Division I EDG fuel supply piping. The fuel line supports were installed in 1993, but the specific design change to install a protective grommet was not adequately incorporated into the final design package. This is a violation of 10CFR50, Appendix B, Criterion III, "Design Control." **(VIO 50-410/98-05-03)**

E3 Engineering Procedures and Documentation

E3.1 Unit 2 ECCS Suction Strainer Modification

a. Inspection Scope (37551)

In response to NRC Bulletin 96-03, NMPC installed new ECCS suction strainers in the Unit 2 suppression pool. The inspectors reviewed the engineering design documents, the associated work orders, and observed the installation of the new strainers.

b. Observations, Findings, and Conclusion

In May 1996, the NRC issued Bulletin 96-03 ("Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors") which addressed concerns that the strainers would become plugged by debris during a loss of coolant accident. The Bulletin proposed several options, NMPC chose the installation of large capacity passive strainers at Unit 2; in that the existing strainers could not accommodate the projected debris loading. NMPC designed and installed new suction strainers for the residual heat removal, low pressure core spray, and high pressure core spray systems to satisfy the system pump net positive suction head requirements. The new strainers are of a stacked-disk design and constructed of type 304 stainless steel. All work was accomplished in accordance with the respective TSs for the associated safety systems.

In addition to the work orders (listed in Section M1.1) for the removal and installation of the strainers, the inspectors reviewed the below listed documents related to the strainer modification. The inspectors identified no concerns or unreviewed safety questions, and the proposed changes to the UFSAR appeared appropriate.

• NMP2-415M	Engineering Specification for Bidding Purposes for Replacement of ECCS Suction Strainers
• DDC 2M11330	Design Document Change to NMP2-415M after Award
• DCN N2-97-067	Design Change Notification for the Modifications Required to Provide Access for the ECCS Strainer Replacement - Structural, Mechanical, Electrical, and ALARA
• DDC 2S11055A	Removal of South Suppression Pool Hatch Wall & Mezzanine for ECCS Strainer Replacement
• DDC 2S11067	Field Tolerances for Installation of ECCS Strainers

•	DDC 2M11294	Technical Justification and Installation of ECCS Strainers
•	SE 98-033	Safety Evaluation for ECCS Suction Strainer Replacement
•	LDCR 2-97-150	Licensing Document Change Request for UFSAR Changes due to ECCS Suction Strainer Replacement

The design and installation of the new ECCS pump suction strainers appeared adequate to ensure sufficient net positive suction head for the pumps in the event of a loss of coolant accident (LOCA).

E8 Miscellaneous Engineering Issues

E8.1 (Closed) VIO 50-220 & 50-410/96-01-05: Failure to Complete Safety Evaluation Prior to Installation of Temporary Modification (92903)

On January 31, 1996, the inspectors identified the installation of an emergency temporary modification on the Unit 2 circulating water system prior to the completion of the required 10CFR50.59 safety evaluation. Furthermore, NMPC Procedure GAP-DES-03, "Control of Temporary Modifications," Revision 4, permitted the installation of emergency temporary modifications. NMPC letter, dated May 22, 1996, documented the root cause and corrective actions for this violation. The inspectors' review of the immediate corrective actions was documented IR 50-220 & 50-410/96-01. With respect to actions to prevent recurrence, NMPC removed the provision for emergency temporary modification from the temporary modifications procedure. Based on the inspectors' review of the licensee's corrective and preventive actions, and observation that there have been no subsequent installations of a temporary modification prior to the completion of the associated safety evaluation, this violation is closed.

E8.2 (Closed) URI 50-220 & 50-410/96-14-02: Potential Over-pressurization Concerns Relative to NRC Generic Letter 96-06 (92903)

During the evaluation of NRC Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity during Design-Basis Accident Conditions," NMPC identified some system piping penetrating the drywell that could potentially be over-pressurized during a design basis LOCA. Subsequent NMPC examination of each penetration, in accordance with the guidance provided in GL 96-06, concluded that the systems remained operable. An unresolved item was assigned to track the licensee's resolution of this generic issue and to assess whether this condition was potentially outside the design bases of the plants.

Subsequent discussions between the NRC Region I Office and NRR concluded that thermal over-pressurization is not necessarily a condition outside the design bases of the plant. NRC staff follow-up of each licensee's actions to address GL 96-06 issues will be assessed via a future inspection activity. This unresolved item is closed.

E8.3 (Closed) URI 50-220/97-12-08: Impact of Drywell to Wetwell Bypass on Containment Pressure (90712, 92903)

On October 12, 1997, GE issued a 10CFR21 (Part 21) notification regarding the possible reduction in the pressure suppression capability of the torus due to bypass leakage between the drywell and the torus. During review of the Part 21 notification for Unit 1, NMPC determined that, although the specific issue described in the Part 21 was not a concern at Unit 1, other conditions may challenge the pressure suppression capability of the torus. Particularly, during drywell and torus inerting, deinerting, and primary containment pressure maintenance evolutions, the drywell and torus vent valves were usually open concurrently, establishing a drywell-to-torus bypass pathway. Upon identification of this vulnerability, NMPC issued a procedure change to prohibit concurrent opening of both the drywell and torus vent and purge valves during primary containment venting, filling, and make-up evolutions.

NMPC issued LER 50-220/97-15 to document this condition. However, at that time, NMPC had yet to complete their analysis to determine whether the containment design pressure would be exceeded should a LOCA have occurred while the drywell-to-torus valves were open. The inspectors' review of NMPC's evaluation of the Part 21, and the LER were provided in NRC IR 50-220/97-12. As documented in the IR, the issue was unresolved pending the completion of NMPC's analysis.

Subsequently, NMPC completed their analysis and determined that the containment post-accident pressure, with the bypass pathway, would not have exceeded maximum design pressure. Based on this analysis, NMPC retracted LER 50-220/97-15 via letter, dated May 1, 1998. This unresolved item is closed.

E8.4 (Closed) LER 50-220/98-05: Unrecognized Violation of TS Secondary Containment

a. Inspection Scope (92700)

The inspectors reviewed NMPC's analysis and corrective actions associated with the discovery of a breach of Unit 1 secondary containment integrity due to normally open vents on the containment spray raw water heat exchanger.

b. Observations and Findings

In April 1998, with Unit 1 at full power, NMPC discovered a breach of secondary containment. Specifically, the containment spray raw water (CSRW) heat exchanger vents were normally open, in accordance with the operating procedure (N1-OP-14, "Containment Spray"). The open vents provided a potential unmonitored release path from the secondary containment (reactor building) atmosphere, via the reactor building drain system, through the open CSRW vents, to the service water system, and to the environment via the service water discharge to Lake Ontario. Unit 1 TS, Section 3.4.0, requires reactor building integrity be maintained during power operation; since the definition of reactor building integrity

was not satisfied, a reactor shutdown was initiated in accordance with TS 3.0.1. The procedure was revised, the vent valves were closed, and the shutdown was terminated at 94% power. DER 1-98-0903 was written, and the appropriate NRC notifications were made as required by 10CFR50.72.

The inspectors determined that the original design for the containment spray system was to operate with the vents open to maximize heat exchanger performance. In 1986, the vents were closed following the replacement of the heat exchangers. In 1991, DER 1-91-Q-1417 was written to address concerns associated with the vents being closed and the effect of non-condensible gas build-up in the heat exchangers. The DER disposition stated that testing of the containment spray heat exchangers showed that the system would perform its design basis function with the vents closed. In addition, the DER noted that the Tube Exchanger Manufacturers Association (TEMA) recommends that the heat exchanger be operated with the vents open. Therefore, in 1992, a plant change request was processed to operate with the vents valves open, which would maximize system performance. In response to the containment concern and in support of the decision to close the vent valves, NMPC performed an Operability Determination and a 10CFR50.59 Applicability Review.

The inspectors discussed this issue with the responsible staff members and unit management, reviewed the associated documentation, and considered the actions taken and decisions made by NMPC to have been appropriate. The LER identified the cause of the event as inadequate design analysis, in that, the personnel involved did not consider the interaction between the open vents and secondary containment integrity. The analysis of the event revealed that surveillance tests conducted in 1996 and 1997 showed that the reactor building emergency ventilation system (RBEVS) was able to maintain a negative pressure relative to the environment. NMPC concluded that operation with the vent valves open would not affect the ability of the RBEVS to maintain negative pressure in the event of a design basis accident.

Notwithstanding, plant operation with secondary containment integrity not properly established is a violation of the Unit 1 TS, Section 3.4.0. However, this non-repetitive, licensee identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy. **(NCV 50-220/98-05-04)**

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. This LER is closed.

c. Conclusion

During a review of Unit 1 operating procedures, NMPC identified that the normally open vent valves on the containment spray raw water heat exchangers violated secondary containment integrity, in that it provided a potential release path from the reactor building to the environment. This licensee identified and corrected violation of secondary containment integrity requirements was not cited.

E8.5 (Closed) LER 50-220/98-06: Design Deficiency Associated with CREVS Radiation Monitors

a. Inspection Scope (37551, 90712)

NMPC identified that the radiation monitors for the Unit 1 control room emergency ventilation system (CREVS) would not have automatically initiated the system in the event of a main steam line break (MSLB). The unit was shutdown because repairs were not able to be completed within the time allowed by the TSs.

The inspectors discussed the issue with various engineering personnel, and Unit 1 management. In addition, they monitored portions of the reactor shutdown and the system modifications. The inspectors reviewed the DERs, the associated Safety Evaluation, implementation of the TS amendment, and the modification functional test; the inspectors also performed an in-office review of the LER.

b. Observations and Findings

On April 21, 1998, NMPC identified that the Unit 1 CREVS would not have automatically initiated, as designed, following a MSLB. The SSS appropriately entered TS LCO 3.4.5.e, which allowed 7 days to restore the system to an operable status or required the reactor be shutdown. NMPC identified that the trip settings for the radiation monitors installed on the intake of the CREVS were set too high. Unable to adjust the radiation monitors to properly initiate CREVS for a loss of coolant accident (LOCA), NMPC initiated a plant shutdown on April 28, which was completed on April 29.

The inspectors determined that the radiation set point was less than or equal to 800 counts per minute ($\leq$800 cpm); this was below the Unit 1 TS required set point of 1000 cpm. NMPC determined that the set point for MSLB was $\leq$210 cpm, but the existing monitors could not be set low enough to detect LOCA conditions. To ensure that the CREVS would initiate for both a MSLB and a LOCA, NMPC proposed a TS amendment to change the CREVS automatic initiation signal from high radiation to signals from the reactor protection system for MSLB (main steam line high flow or main steam line tunnel high temperature) and LOCA (high drywell pressure or low-low reactor pressure vessel water level). In addition, the set point for the radiation monitors was adjusted to $\leq$193 cpm. The NRC approved this TS amendment on May 23, 1998.

NMPC determined the cause of the event to be an inadequate engineering evaluation in 1984. A contributing factor was inadequate design control. Corrective actions included incorporation of the lessons learned from this event into the engineering department continuing training program, and a review of other radiation monitor set point calculations. The inspectors discussed the modifications with the CREVS system engineer and control room personnel, and reviewed the completed DERs, safety evaluation and the post-modification test, and had no concerns. This event was of low safety significance, in that, the emergency

procedures require the operators to verify the CREVS is in operation, or to start the system manually, in the event of a MSLB or LOCA. Notwithstanding, the failure to properly evaluate the initiation logic for the CREVS is a violation of 10CFR50, Appendix B, Criterion XI, "Test Control." This non-repetitive, licensee identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy. **(NCV 50-220/98-05-05)**

The inspectors verified that the LER was completed in accordance with the requirements of 10CFR50.73. This LER is closed.

c. Conclusions

During a review of the control room emergency ventilation system initiation logic, NMPC determined that the system would not automatically initiate, as required. Specifically, the system would not automatically start as a result of a main steam line break or a loss of coolant accident. This licensee identified and corrected violation of 10CFR50, Appendix B, Criterion XI, "Test Control," was not cited.

E8.6 (Closed) LER 50-410/98-07: TS 3.0.3 Entry Due to Missed Logic System Functional Testing of Loss of Voltage and Degraded Voltage Channels (90712)

The technical issues associated with this LER were described in Section E3.1 of IR 50-410/98-02. The inspectors performed an in-office review and verified that the LER was completed in accordance with 10CFR50.73. This LER is closed.

E8.7 (Closed) Part 21 50-220/98-01: Defective GE SBM-Type Switches at Unit 1

a. Inspection Scope (36100)

In January 1998, NMPC initiated a DER as a result of a GE Nuclear Energy (GENE) Part 21 notification of an adverse condition related to the spring-return function of some GE provided control switches that could damage the associated control circuits. In March 1998, GENE issued a revision to the notification explaining the failure mode and root cause. The inspectors reviewed the revised Part 21 and the DER disposition.

b. Observations, Findings and Conclusion

On March 19, 1998, GENE revised the Part 21 notification regarding a failure of some GE SBM-type control switches having a spring-return feature. GE manufactures these switches as commercial grade. The switches were purchased as commercial grade and then dedicated for safety related applications by NMPC. During the review of the original Part 21 notification, NMPC identified seven potentially affected switches in safety-related functions for Unit 1 and NMPC engineering initiated DER 1-98-0202.

The inspectors reviewed the revised Part 21 notification, the DER disposition, and discussed the issue with the responsible maintenance engineer. GENE determined

the failure mechanism to be binding between the rear bearing and the casing support caused by shrinking of the casing support due to "post-mold cure." The mold for the casings had worn such that the bearing support hole was at the minimum allowable value, and post-mold cure caused the hole to shrink. When operated manually, the switch contacts operated properly. GENE also determined that switches in service for over two-years were not subject to the failure mode. The licensee identified that all of the questionable switches at Unit 1 were greater than two-years old, except one. The inspector determined that the remote manual control switch for the emergency cooling condenser vent to torus blocking valve (the one exception) will be monitored until the two-year period is over. The inspector noted that it is NMPC's standard operating practice to verify that control switches spring return to the normal position and that this verification may be subject to peer (dual) verification.

The inspectors observed that NMPC's follow-up of the Part 21 report concerning GE SBM-type control switches and their identification of the susceptible switches at Unit 1 was thorough and an example of an improving questioning attitude by the engineering staff. This Part 21 report is closed.

IV. PLANT SUPPORT

Using NRC IP 71750, the resident inspectors routinely monitored the performance of activities related to the areas of radiological controls, chemistry, emergency preparedness, security, and fire protection. Minor deficiencies were discussed with the responsible management, and significant observations are detailed below.

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Radiological Environmental Monitoring Program Implementation

a. Inspection Scope (84750)

The following areas of the Radiological Environmental Monitoring Program (REMP) were assessed and reviewed:

- selected sampling and analysis procedures,
- analytical data from 1998,
- selected sampling techniques,
- operability and calibration of air samplers,
- 1996 and 1997 Land Use Census results,
- 1996 and 1997 Annual Radiological Environmental Operating Reports, and
- licensee's investigation after identifying Iodine-131 (I_{131}) in milk in April 1997

b. Observations and Findings

The sampling and analysis procedures provided appropriate guidance to perform REMP tasks. Sampling techniques were appropriate to collect environmental sample media. The air sampling equipment and water compositors were operable during 1997 to present, as evidenced in the sample logs and sample analysis results. The air sampling equipment calibration results were within the established tolerances, and calibrations were performed within the frequency specified in the procedure. A Land Use Census was performed 1996 and 1997 during the growing season, as required by the TS.

The 1996 and 1997 Annual Radiological Environmental Operating Reports included results of the environmental monitoring program, program changes, land use census, and inter-laboratory comparison program, as required by TS. The reports provided a comprehensive summary of the results of the REMP around the site and met the TS reporting requirements.

I_{131} was detected in a routine indicator milk sample during the week of April 21, 1997 at a concentration of 0.5 pCi/L. The licensee immediately conducted an investigation and discussed this issue with the NRC in April 1997. The primary analytical contract laboratory immediately investigated the analysis results by re-analyzing the sample and confirming the results with another laboratory. The investigation was detailed and exhaustive. The licensee concluded that: (1) the source of the iodine could not be determined; (2) that it was unlikely the source of the I_{131} was from either Nine Mile Point or from the J. A. FitzPatrick plant; and, (3) the dose was insignificant compared to the doses received from natural sources. The details and conclusions of the investigation as a result of the I_{131} was documented in the 1997 Annual Radiological Environmental Operating Report, as required by TS.

c. Conclusions

The licensee effectively maintained and implemented the Radiological Environmental Monitoring Program in accordance with regulatory requirements. The licensee performed a comprehensive review of an anomalous indication of I_{131} in an environmental milk sample.

R1.2 Meteorological Monitoring Program Implementation

a. Inspection Scope (84750)

The inspectors reviewed the implementation of the meteorological monitoring program (MMP); specifically, the status of the meteorological instrumentation including, system operability, and the associated channel calibration and channel functional test procedures and results were reviewed for the period of July 1996 to May 1998.

b. Observations and Findings

Channel calibrations, channel checks, and channel functional tests were performed within the frequency recommended in Table 4.3.7.3-1 of TS 3/4.3.7.3 and Regulatory Guide 1.23, Revision 1. The wind speed, wind direction, and temperature sensors on the towers were operable; and applicable data was available. The associated procedures provided appropriate guidance to perform channel functional tests and channel calibrations for all the channels, except for the wind speed channels.

The required meteorological monitoring instrumentation channels (wind speed, wind direction, and delta temperature) shall be demonstrated operable by the semi-annual performance of the channel check and channel calibration operations, as required by TS 3/4.3.7.3. Prior to May 22, 1998, NMPC had not performed a channel calibration of the wind speed channel. According to Unit 2 TS, Section 1.4, a channel calibration "... shall be the adjustment, as necessary, of the channel output so that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The channel calibration shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the channel functional test." Relative to wind speed, the licensee's calibration did not include the wind speed sensor, as required by the TS. Therefore, the accuracy of the wind speed channel was not measured during channel calibrations. Failure to perform the channel calibration of the wind speed channel, in accordance with the Unit 2 TS, Section 1.4, constitutes a violation of Unit 2 TS 3/4.3.7.3. **(VIO 50-410/98-05-06)**

c. Conclusion

Overall, the licensee effectively maintained meteorological monitoring system operability, and satisfactorily performed channel calibrations and channel functional tests for the meteorological instrumentation, with the exception of the wind speed channel. The failure to perform the channel calibration of the wind speed channel according to the channel calibration definition of TS 1.4, in that, the accuracy of the entire wind speed channel was not measured from the sensor to the channel output, constitutes a violation of Unit 2 TS 3/4.3.7.3. **(VIO 50-410/98-05-06)**

R1.3 Unit 1 and Unit 2 Tours

a. Inspection Scope (83750)

A review was performed of housekeeping, radiological boundaries, and access controls. Information was gathered through tours of Unit 1 and Unit 2 reactor buildings and drywells, and through discussions with cognizant personnel.

b. Observations and Findings

Housekeeping was adequate in that walkways and aisles were clear and free of debris, and major plant work areas were generally well illuminated. Some examples

of poor lighting were observed in the Unit 2 drywell; reportedly due to a trip of a temporary power breaker switch. This was corrected the next day by re-distributing several temporary lighting strings to another temporary power box. High radiation areas and contaminated areas were well delineated and clearly posted. A selective examination of the access to areas with dose rates greater than 1000 mrem per hour at 30 centimeters revealed appropriate controls, such as locked doors or flashing lights. Access to radiologically controlled areas was well controlled with radiation work permits, health physics briefings, use of electronic dosimetry, and radiological postings.

c. Conclusion

Housekeeping was adequate in that aisles and walkways were clear and free of debris, radiological boundaries and postings were clear, and access controls to radiologically controlled areas were effective.

R1.4 Unit 2 Refueling Outage

a. Inspection Scope (83750)

A review was performed of radiological controls implemented for the Unit 2 refueling outage work. Specific areas evaluated included the refuel floor, drywell, and suppression pool. Information was gathered through tours of the facility, interviews with cognizant personnel, attendance at several drywell work scheduling meetings, and selected examinations of reviews to maintain radiation exposures as-low-as-is-reasonably-achievable (ALARA).

b. Observations and Findings

Refuel Floor: ALARA Review No. 98-2-23, "Refuel Floor Activities," was used as the major radiological control plan for work on the refuel floor. It included basic ALARA requirements for refuel floor activities, and specific requirements for reactor pressure vessel disassembly/reassembly, underwater activities, and cavity/storage pit decontamination. The review was based on lessons learned during previous outages and pertinent industry events. The review included specific requirements for work coordination, pre-job briefings, dose minimization, and contamination controls. The chief radiation protection (RP) technician maintained close oversight of personnel access, was thoroughly knowledgeable of ongoing work and radiological controls, communicated well with plant work groups, and ensured that personnel were instructed on radiological conditions and requirements prior to work.

Drywell Major radiological controls for the drywell included close health physics oversight of drywell access, radiation work permits and ALARA reviews, extensive use of temporary shielding, flushing of drain lines and reactor vessel nozzles, and specific work planning and control. A chemical decontamination of the recirculation system had been planned to minimize dose for recirculation valve work, but was canceled when the system could not be fully isolated during the scheduled work window. To compensate for this cancellation, several reactive drywell planning

meetings were conducted to establish a revised work plan that accomplished required work while minimizing radiation exposure. Major station work groups attended the meeting including outage planning, operations, maintenance, engineering, and radiation protection.

Suppression Pool: Major work performed in the suppression pool involved a modification to replace emergency core cooling system suction strainers. The suction strainers were located below suppression pool water level, requiring work to be performed by divers. Extremity dosimetry was issued to the divers in accordance with procedural guidance, and licensee actions including close oversight by health physics personnel and use of administrative limits ensured that extremity exposures were within regulatory and administrative limits. However, several examples were identified in which the available administrative extremity exposure limits were incorrectly determined and documented on Procedure S-RPIP-5.4, "Dose Tracking and Timekeeping," Attachment 1: "Dose Tracking and Timekeeping Worksheet." Procedural guidance did not specify the exact method for determining "available exposure," and several examples were identified in which the administrative available exposure for the "extremity" was calculated by subtracting the accrued whole body dose (rather than the accrued extremity dose) from the administrative extremity dose limit.

The radiation protection manager acknowledged that the observed method for determining the available administrative exposure for the extremity was incorrect, and stated that instructions for determining the available administrative exposure for the extremity would be clarified by a revision to procedure S-RPIP-5.4, "Dose Tracking and Timekeeping." This failure constitutes a violation of minor safety significance and is not subject to formal enforcement action.

c. Conclusions

Radiological controls for outage work were well planned and health physics personnel maintained close oversight of work.

Procedure S-RPIP-5.4, "Dose Tracking and Timekeeping," lacked clarity with regard to the method for determining the available administrative extremity exposure, and several examples of inaccurate determinations of available administrative extremity exposure were identified. The radiation protection manager stated that instructions for determining the available administrative extremity exposure would be clarified by a procedure revision.

R1.5 ALARA Goals and Initiatives

a. Inspection Scope (83750)

A review was performed of the use of goals to maintain radiation exposures ALARA, and of ALARA initiatives implemented for the Unit 2 refueling outage. Information was gathered through reviews of ALARA goals, tours of the plant,

discussions with cognizant personnel, and a review of Safety Evaluation No. 98-040, "Chemical Decon of RCS."

b. Observations and Findings

Outage exposure estimates were detailed, appeared reasonable, and were frequently used to evaluate performance with regard to radiation exposure. Exposure estimates were established for work groups, major jobs, and the entire Unit 2 refueling outage. To ensure the usefulness of the exposure goals, prompt changes were made to reflect major changes in work scope and cancellation of an attempted chemical decontamination of the recirculation system.

The following examples of ALARA initiatives were noted:

- A camera monitor was set-up at the entrance to the radiologically controlled area that allowed for viewing of multiple in-plant job locations including specific drywell valves, under vessel areas, and various locations of the refueling floor.

- A pre-outage ALARA report was published that summarized radiological control outage planning efforts. The document demonstrated thorough planning and preparation for outage work.

- A chemical decontamination of the reactor recirculation system was planned and set-up to reduce dose rates for major recirculation valve work. The planned decontamination involved the low oxidation-state metal ion (LOMI)-alkaline permanganate (AP)-LOMI process (LOMI-AP-LOMI). However, the chemical decontamination effort was canceled after water leakage through the jet pump "ram" heads and through the pump discharge valve could not be stopped during the scheduled work window.

- Plans were in place to hydro wash eleven vessel nozzles including five reactor recirculation discharge nozzles, one jet pump instrumentation nozzle, one HPCS nozzle, three feedwater nozzles, and one LPCI nozzle.

- Numerous temporary shielding applications for job specific and general area dose reduction were observed. Examples included ten recirculation discharge nozzles, the north scram dump column, and water shields for the chemical decontamination resin columns.

c. Conclusions

ALARA goals were effectively used as a tool to aid radiological planning to minimize radiation exposure. Numerous ALARA initiatives including publication of a pre-outage report, use of cameras, use of temporary shielding, planned reactor vessel nozzle hydro washes, and an attempt to chemically decontaminate the reactor recirculation system demonstrated management support and a commitment to maintaining radiation exposures ALARA.

R7 Quality Assurance in RP&C Activities

R7.1 Quality Assurance Audit Program

a. Inspection Scope (84750)

The inspector reviewed the following Quality Assurance (QA) audit reports:

- 97015 Environmental Protection, Radioactive Effluents, Radiological Material Processing, Transport and Disposal
- 96022 Radiological Effluents, REMP, Offsite Dose Calculation Manual, Radioactive Material Processing

b. Observations and Findings

The objectives of the 97015 audit covered specific areas of the REMP and the objectives of the 96022 audit covered specific areas of the REMP and MMP. Both audits were conducted similarly. Previous DERs were reviewed and followed up for completeness and effectiveness of corrective actions. The auditors reviewed personnel performance, program implementation, and records. No significant issues were identified.

c. Conclusion

The licensee met the QA audit requirements. The audits were thorough and of sufficient depth to assess the REMP and MMP.

R7.2 Quality Assurance of Analytical Measurements

a. Inspection Scope (84750)

The following aspects of the Quality Assurance/Quality Control (QA/QC) program of the primary contractor laboratory for the period of July 1996 to May 1998 were reviewed:

- the results of the internal QC program, including efficiency and resolution checks, daily instrument energy checks, control charts of instrument performance, and routine calibrations; and
- the results of the QA program, including the Inter-laboratory Comparison (cross-check) Program.

b. Observations and Findings

The QA/QC program for analyses of REMP samples is conducted by the primary analytical contract laboratory, J. A. FitzPatrick Environmental Laboratory. The laboratory implemented intra-laboratory (QC) and inter-laboratory (QA) programs. The intra-laboratory (QC) program included efficiency and resolution checks, daily

instrument energy checks, control charts of instrument performance, and routine calibrations. The results for 1996 and 1997 were compiled and documented in the Environmental Laboratory QA/QC Report. The results from 1996 through 1998 were within the acceptance criteria. The laboratory continued to participate in an Inter-laboratory Comparison Program provided by a vendor (Analytics, Inc.). The laboratory's participation in this program was effective.

In addition to the above required comparison programs, the laboratory participated in a cross check program with the Environmental Measurements Laboratory (EML), Department of Energy. The analysis results of this program were generally in agreement, with occasional disagreements in certain samples. The laboratory had conducted an investigation and determined the cause of the disagreements. EML provided sample media and geometries different from the usual sample media and geometries provided by Analytics, Inc. and the licensee. The laboratory accommodated and incorporated different and difficult media and geometries into the program. The licensee issued the 1997 Annual Radiological Environmental Operating Report, as required by TS.

c. Conclusion

The contractor laboratory continued to implement effective QA/QC programs for the REMP, and continued to provide effective validation of analytical results. The laboratory demonstrated the ability to accommodate and incorporate difficult media and geometries into the program. The programs were capable of ensuring independent checks on the precision and accuracy of the measurements of radioactive material in environmental media.

R7.3 Deviation Event Reports and Self Assessments

a. Inspection Scope (83750)

A review was performed to evaluate methods used to identify, evaluate, and resolve radiological control program deficiencies. Information was gathered by a selected review of radiological control issues documented in DERs and a review of the self-assessment procedure.

b. Observations and Findings

The DER system had a high volume, low threshold, and the staff readily used the system to address program deficiencies. Ten DERs were selected to evaluate the effectiveness of the system for resolving problems. Problem evaluations including identification of cause and corrective actions taken were reasonable and commensurate with the significance of identified issues.

Self-assessment Procedure NIP-ECA-05, "Posting and Surveys," was thorough in that it included a review of radiation work permits, interviews with cognizant personnel, extensive walkdowns of Unit 1 and Unit 2, and a compliance review with respect to procedures and the updated safety analysis report. Assessment team

members were well qualified and included four specialists, three supervisors, two chief technicians, and one peer evaluator from Diablo Canyon. Numerous strengths and opportunities for improvement were identified. Significant issues were placed into the DER system, personnel were assigned to resolve identified issues, and due dates for completion were established. A selected review of issues placed into the DER system and interviews with responsible personnel indicated that adequate progress was being made toward resolution of identified issues.

c. Conclusions

The DER system and the self-assessment program were effective in their use to identify, evaluate, and resolve radiological program deficiencies.

S2 Status of Security Facilities and Equipment

S2.1 Tour of the Protected Area Perimeter (71750)

The inspectors toured the Nine Mile Point Nuclear Station protected area perimeter and found the fence and perimeter detection systems intact. In addition, since the tour was completed at approximately 1:30 a.m., the inspectors visually assessed protected area lighting and found it to be acceptable.

S8 Miscellaneous Security and Safeguards Issues

S8.1 (Closed) URI 50-220 & 50-410/96-06-06: Fitness-for-Duty Random Selection Process Software Altered (92904)

In May 1996, NMPC discovered that two contractors had intentionally altered the fitness-for-duty (FFD) computer software code. Specifically, the alteration excluded the two individuals from the random selection process for FFD testing. An unresolved item was opened pending completion of NMPC's internal investigation, and subsequent NRC review of the results.

On April 28, 1998, the NRC issued an enforcement action letter (EA 97-185) to NMPC, stating that the failure to ensure that individuals were tested in a statistically random and unpredictable manner was a violation of 10CFR26.24, and constituted a Severity Level III violation. However, based on the NRC Enforcement Policy, Section VII.B.6, the NRC decided to exercise discretion and not issue a Notice of Violation. **(NCV 50-220 & 50-410/98-05-08)** Unresolved item 50-220 & 50-410/96-06-06 is closed.

S8.2 Administrative Closure of Escalated Enforcement Items (92904)

The below escalated enforcement items (EEIs) are being administratively closed, based on the issuance of the enforcement action letter (EA 98-234), dated May 20, 1998, and the associated determination:

- EEI 50-220 & 50-410/98-01-01 was reclassified as a Level IV violation - **VIO 50-220 & 50-410/98-01-01**
- EEI 50-220 & 50-410/98-01-02 was withdrawn

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

At periodic intervals, and at the conclusion of the inspection period, meetings were held with senior station management to discuss the scope and findings of this inspection. The exit meetings for specialist inspections were conducted upon completion of their onsite inspection:

- Environmental Monitoring May 23, 1998
- Outage Radiation Protection May 23, 1998

The final exit meeting occurred on June 12, 1998. During this meeting, the resident inspector findings were presented. NMPC did not dispute any of the inspectors findings or conclusions. Based on the NRC Region I review of this report, and discussions with NMPC representatives, it was determined that this report does not contain safeguards or proprietary information.

ATTACHMENT 1

PARTIAL LIST OF NMPC PERSONS CONTACTED

Niagara Mohawk Power Corporation

R. Abbott	Vice President, Nuclear Engineering
D. Barcomb	Manager, Unit 2 Radiation Protection
D. Bosnic	Manager, Unit 2 Operations
J. Burton	Manager, Training
H. Christensen	Manager, Security
J. Conway	Vice President, Nuclear Generation
G. Correll	Manager, Unit 1 Chemistry
R. Dean	Manager, Unit 2 Engineering
A. DeGracia	Manager, Unit 1 Work Control
S. Doty	Manager, Unit 1 Maintenance
K. Dahlberg	Plant Manager, Unit 2 (Acting)
G. Helker	Manager, Unit 2 Work Control
A. Julka	Director, ISEG
P. Mezzafero	Manager, Unit 1 Technical Support
B. Murtha	Manager, Unit 1 Operations (Acting)
L. Pisano	Manager, Unit 2 Maintenance
N. Rademacher	Manager, Quality Assurance
R. Randall	Manager, Unit 1 Engineering
V. Schuman	Manager, Unit 1 Radiation Protection
R. Smith	Plant Manager, Unit 1
C. Terry	Vice President, Nuclear Safety Assessment & Support
C. Merritt	Manager, Unit 2 Chemistry
K. Ward	Manager, Unit 2 Technical Support
D. Wolniak	Manager, Licensing

New York Power Authority

B. Gorman	Environmental Supervisor, J. A. FitzPatrick Environmental Laboratory
D. Kiepper	I&C Manager
A. McKeen	Radiological and Environmental Services Manager

Attachment 1 (cont.)

INSPECTION PROCEDURES USED

IP 36100	10 CFR Part 21 Inspections at Nuclear Power Plants
IP 37551	On-Site Engineering
IP 60710	Refueling Activities
IP 61726	Surveillance Observations
IP 62707	Maintenance Observations
IP 71001	Licensed Operator Re-qualification Program Evaluation
IP 71707	Plant Operations
IP 71750	Plant Support
IP 83750	Occupational Radiation Exposure
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
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 92902	Follow-up - Maintenance
IP 92903	Follow-up - Engineering
IP 92904	Follow-up - Plant Support
IP 93702	Prompt Onsite Response to Events at Operating Power Reactors

Attachment 1 (cont.)

ITEMS OPENED, CLOSED, AND UPDATED

OPENED

50-220/98-05-01	VIO	Failure to follow procedure, resulting in a missed plant shutdown
50-410/98-05-02	VIO	Failure to conduct surveillance test on batteries
50-410/98-05-03	VIO	Failure to perform adequate design for EDG modification on fuel line
50-220/98-05-04	NCV	Failure to maintain secondary containment integrity
50-220/98-05-05	NCV	Failure to properly evaluate control room emergency ventilation system initiation logic
50-410/98-05-06	VIO	Failure to perform calibration of wind speed channel
50-220 & 50-410/98-05-08	NCV	Failure to ensure individuals were randomly tested for fitness-for-duty

CLOSED

50-220/98-05-04	NCV	Failure to maintain secondary containment integrity
50-220/98-05-05	NCV	Failure to properly evaluate control room emergency ventilation system initiation logic
50-220 & 50-410/98-05-08	NCV	Failure to ensure individuals were randomly tested for fitness-for-duty
50-220/96-01-03	URI	Lack of Testing of control room annunciators
50-220 & 50-410/96-01-05	VIO	Failure to perform safety evaluation prior to installation of temporary modification
50-220 & 50-410/96-06-06	URI	Apparent Tampering of fitness-for-duty computer
50-410/96-10-03	VIO	Procedure changes not in accordance with TS requirements
50-220 & 50-410/96-14-02	URI	Over-pressurization concerns relative to GL 96-06
50-410/97-02-02	VIO	Missed TS surveillance on HPCS actuation instrumentation
50-220/97-12-08	URI	Impact of drywell-to-wetwell bypass on containment pressure
50-220/98-05	LER	Unrecognized Violation of TS Secondary Containment
50-220/98-06	LER	Design Deficiency Associated with Control Room Emergency Ventilation System Radiation Monitors
50-410/98-05	LER	Reactor Water Cleanup Isolation on High Differential Flow Caused by Relief Valve Lifting

Attachment 1 (cont.)

CLOSED

50-410/98-06	LER	Engineered Safety Feature Actuations Due to Partial Loss of Offsite Power
50-410/98-07	LER	TS 3.0.3 Entry Due to Missed Logic System Functional Testing of Loss of Voltage and Degraded Voltage Channels
50-410/98-08	LER	HPCS Out of Service with One Division RHS in Suppression Pool Cooling
50-410/98-09	LER	Missed Battery Technical Specification Surveillance Requirements Due to Inappropriate Interpretation
50-410/96-10-01	URI	Post-maintenance testing of Unit 2 MSLRM
50-220/98-01	Part 21	Defective GE SBM-Type Switches at Unit 1

UPDATED

50-220 & 50-410/98-08-01	EEI	Failure to properly control, store, and classify safeguards information - changed to VIO 50-220 & 50-410/98-02-01

WITHDRAWN

50-220 & 50-410/98-08-02	EEI	Failure to report an event in accordance with 10CFR73.71

LIST OF ACRONYMS USED

ALARA	As Low As Is Reasonably Achievable
cpm	counts per minute
CFR	Code of Federal Regulations
CREVS	Control Room Emergency Ventilation System
DBG	Double Blade Guide
DER	Deviation/Event Report
EA	Enforcement Action
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EEI	Escalated Enforcement Item
EML	Environmental Monitoring Laboratories
ESF	Engineered Safeguards Feature
FFD	Fitness for Duty
GE	General Electric
GENE	General Electric Nuclear Energy
GL	Generic Letter
HPCS	High Pressure Core Spray
I_{131}	Iodine 131
IR	Inspection Report
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LPCI	Low Pressure Coolant Injection
MMP	Meteorological Monitoring Program
MSLB	Main Steam Line Break
NCV	Non-Cited Violation
NMPC	Niagara Mohawk Power Corporation
NOED	Notice of Enforcement Discretion
NRC	Nuclear Regulatory Commission
QA	Quality Assurance
QC	Quality Control
Part 21	10 CFR 21
PCE	Procedure Change Evaluation
RBEVS	Reactor Building Emergency Ventilation System
REMP	Radiological Effluents Monitoring Program
RFO	Refueling Outage
RHS	Residual Heat Removal System
RP&C	Radiological Protection & Chemistry
SFP	Spent Fuel Pool
SORC	Station Operating Review Committee
SRO	Senior Reactor Operator
SSS	Station Shift Supervisor
TEMA	Tube Exchanger Manufacturer's Association

Attachment 1 (cont.)

TS	Technical Specification
TSSR	Technical Specification Surveillance Requirement
UFSAR	Updated Final Safety Analysis Report
Unit 1	Nine Mile Point Unit 1
Unit 2	Nine Mile Point Unit 2
URI	Unresolved Item
VIO	Violation
WO	Work Order