U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-410/86-37

Docket No. 50-410

License No. CPPR-112

Licensee: Niagara Mohawk Power Corporation
300 Erie Boulevard, West
Syracuse, New York 13202

Facility Name: Nine Mile Point Nuclear Power Station Unit-2

Inspection At: Scriba, New York

Inspection Conducted: July 14-18, July 28-August 1, and August 11-15, 1986

Inspectors: _____ 10/22/86
T. Koshy, Reactor Engineer — date

_____ 10/22/86
for C. Woodard, Reactor Engineer — date

_____ 10/22/86
for R. J. Paolino, Lead Reactor Engineer — date

_____ 10/22/86
for L. S. Cheung, Reactor Engineer — date

Approved by: _____ 10/22/86
C. J. Anderson, Chief, Plant Systems Section, EB, DRS — date

Inspection Period July 14 - 18, July 28 - August 1, and August 11 - 15, 1986 (Report No. 50-410/86-37).

Areas Inspected: Unannounced routine inspections in the areas of Instrumentation and Instrumentation Cable Installation. Announced inspections and investigations in the review of licensee actions taken in the resolution of previously identified findings, construction deficiencies, and open items.

Results: One violation was identified (failure to comply with environmental requirements to assure continued qualification of instrumentation to perform its safety function - 10 CFR 50 Appendix B Criterion V).

DETAILS

1.0 Persons Contacted

1.1 Stone and Webster Engineering Corp

Tom Johnson, Chief Contruction Supervisor
Jeff Rodabayh, Principal Field Engineer
Mark Hutchinson, Construction Supervisor
Den Robinson, QC Inspector
R. Askew, Senior QC Inspector
G. March, Assistant Superintendent, FQC
Paul Rutledge, Test and Start Up Group Supervisor
*T. S. Farrell, Assistant Project Engineer
*James Drake, Jr. SU/T Special Project Supervisor
*T. T. Arrington, Resident Manager
A. Z. Pinter, QC Engineer
E. J. Magilley, Assistant Superintendent
J. Gallagher, Site Licensing Engineer
M. Sheldon, Manager Administration Services

1.2- Niagara Mohawk Power Corporation

Gary Ptak, Contract Administrator
M. Cummins, Chief I&C Technician
*L. G. Fenton, Audit Group Lead
*W. Hansen, Manager Nuclear QA Operation
*A. Kovac, Audit Supervisor
*R. B. Abbott, Station Superintendent
*A. Loveland, EQ Engineer
*E. R. Klein, Manager Project Engineer
*K. A. Dahlby, Site Material System
S. K. Agarwal, Special Projects Engineer
J. T. Conway, Power Ascension Manager
A. D. Sassani, Senior Engineer
M. J. Ray, Manager Special Projects
R. Brady, Reactor Engineer
J. Swenszkowski, QA Auditor
*I. Weakley, Special Projects
*D. Quamme, Project Director
*C. S. Beckham, QE Supervisor
*T. B. Lee, Special Project
*W. D. Baker, Modification Engineer
*B. G. Hooten, Executive Director Nuclear Operations

1.3 NYS - PSC

*P. D. Eddy, Site Representative

*Attended the August 15, 1986 exit meeting.

2.0 Licensee Actions on Previously Identified Findings, Construction Deficiencies and Open Items

2.1 (Closed) IE Bulletin 79-BU-01, 79-01B Supplements 1,2, and 3 relating to Environmental qualification of 1E Equipment. This bulletin was issued to OL applicants. This bulletin is superseded by the requirements of 10 CFR 50.49, the final rule on Equipment qualification.

This item is closed.

2.2 (Closed) IE Bulletin 79-BU-01A relating to deficiencies in Environmental Qualification for ASCO solenoid valves used in a Harsh Environment. As identified in the bulletin, the licensee has used the qualified ASCO NP-1 valves for harsh environment applications. In order to prevent the inadvertent use of this deficient solenoid valve, a controlled excluded list "Chm 12177-500ee" is utilized in Category 1 procurement.

This item is closed.

2.3 (Closed) IE Circular 78-CI-08. relating to Environmental Qualification of Safety Related Electrical Equipment. This circular was superseded by the requirements of 10 CFR 50.49, the final rule on Equipment qualification.

This item is closed.

2.4 (Closed) IE Bulletin 78-BU-04 relating to environmental qualification of NAMCO D2400X and EA-170-302 limit switches inside containment. The licensee used the qualified NAMCO limit switches. The NRC inspector verified the qualification report in the Environmental Qualification files. The excluded list "Chm 12177-500ee was also revised to prevent inadvertent procurement of deficient NAMCO limit switches for safety related application.

This item is closed.

2.5 (Closed) IE Bulletin 78-BU-02 relating to the use of unprotected terminal blocks for safety related application in a LOCA environment. In the containment and in a steam environment the licensee has utilized qualified Raychem splices instead of terminal blocks.

This item is closed.

2.6 (Closed) IE Bulletin 77-BU-05 relating to the failure of Electrical connectors in a post-LOCA environment. Based on the analysis provided by GE in letter NMP2-2110, these connectors are not exposed to a LOCA environment when they are required to function. The Main steam line radiation monitors sense high radiation from fuel damage due to rod drop. The connectors located, on the main steam line could not be adversely affected to prevent them from performing their safety function.

The connectors on the Standby Liquid Control system (SLC) are on the explosive squib valves. The design basis for this valve to function is failure to insert control rods. These connectors can perform the safety function since the design basis does not cause a harsh environment. For all other safety related applications the licensee has used qualified ITT Canon type connectors.

This item is closed.

2.7 (Closed) IE Notice 84-CI-21 relating to shorter service life of Agastat GP series relays.

The NRC inspector reviewed the following licensee procedures to verify their program to promptly replace equipment before expiration of the qualified life.

PP-131 Rev.0 Extraction of Maintenance and Surveillance data required to maintain equipment qualification

AP-8.0 Rev.1 Assurance of Equipment integrity

AP-8.1 Rev.1 Preventive maintenance

N2-EPM-V13 Rev.0 Replacement of Agastat relays.

The above corrective actions resolve this issue.

This item is closed.

2.8 (Closed) Construction deficiency 85-00-22 relating to failure of Magnesium rotors in MOVs located in a harsh environment. This subject was subsequently addressed in IE Notice 86-02.

The General Electric test Report No. NEDC-31049 Book No. 503A on the subject MOVs confirms the potential operability of these valves for 7 days in a LOCA environment. The licensee post accident operability period for affected valves is one day. Since the containment environment reaches normal condition within one day, these valves can be manually operated should remote capability be lost.

This item is closed.

2.9 (Closed) Construction deficiency 83-00-06 relating to the use of incorrect fission product inventory list. The license revised the fission product inventory list using new data supplied by General Electric. This data is used to calculate the accident and service environment (install integrated dose) for safty related components. The NRC inspector verified the revision to the specifications and the review of the equipment that was already on hand. The accident analysis report in the FSAR and the environmental report were revised. The licensee has a procedure (PP-53) for proper documentation and approval of similar changes to the design criteria.

This item is closed.

2.10 (Closed) Unresolved Item (50-410/86-13-06) relating to the adequacy of the class 1E power supplies and distribution to provide normal running voltage to all class 1E motors and loads within ± 10% of nameplate voltage rating and to provide not less than 80% of nameplate voltage during worst case motor starting transients during technical specification worst case degraded grid conditions. The inspector reviewed the licensee voltage profile test procedure NMP2 E5.0300.001 and the test data obtained during conduct of the test. The test consisted of loading the class 1E buses, obtaining steady state voltage measurements, and then starting various large class 1E and non class 1E loads and measuring the resulting lowest voltage dip on each of the buses. The inspector also reviewed licensee verification of Voltage Profile Study Program Test Results Calculation EC-137 in which the measured voltages were compared to the profile study calculated voltages. The study verified the previous calculations and showed that they were conservative.

The inspector reviewed licensee verification calculation EC-136 Degraded Voltage Relay Set Point. The EC-136 and EC-137 calculations and the actual voltage measurements taken during test E5.0300.001 provide the licensee with sufficient evidence that class 1E electrical loads will be provided with adequate voltage for proper operation during both steady state and transient operations under the worst case of degraded grid.

This item is closed.

2.11 (Closed) Violation B-2 (83-18-71). SWEC procedures used to accomplish electrical raceway installations, installations of seismically-mounted equipment, and power generation control complex (PGCC) installations and modifications were deficient with respect to quantitative and/or qualitative acceptance criteria.

The inspector verified that the licensee had implemented corrective actions in all of the sub-category open items which constitute the violation by a review of all of the sub-category violation items and those NRC inspection reports which reviewed these items and closed them. The inspector also performed additional independent verification by inspection of PGCC divisional separation and inspection of the separation barriers in cable trays and raceways.

Violation B-2 (83-18-71) sub-category corrective action items previously reviewed and closed in earlier NRC Inspection Reports (IR) are as follows:

Category 2-83 Bolting Compliance with Seismic Requirements

Subcategory NRC IR Open Item	Closed in NRC IR No.
83-18-20	85-25
-21	85-27
-22	85-19
-23	85-13
-79	86-29
-105	86-09

Category 3-83 PGCC Divisional Separation

Subcategory NRC IR Open Item	Closed in NRC IR No.
83-18-13	85-12
-73	85-12
-98	86-09
-112	86-18

Category 5-83 Raceway Inspection For Separation Barriers

Subcategory NRC IR Open Item	Closed in NRC IR No.
83-18-01	85-12
-02	85-12
-98	86-09
-100	86-09
-103	86-09

Category 6-83 Inspection Plan Deficiencies for Acceptance Criteria

Subcategory NRC-IR-Open Item	Closed in NRC IR No.
83-18-05	85-17
-06	85-17
-07	85-17
-18	85-17
-97	86-09
-100	86-09
-103	86-09

The inspector reviewed the following Nine Mile documents relating to licensee corrective actions for this violation.

-- NMPC Project Procedure PP 94, "Review of Changes and their Effect on Qualification of Class 1E Environmental and Seismic Category I and II Equipment"

-- NMPC QA Surveillance Reports W-84-492, E-84-599, E-84-553, E-84-555, E-84-951 and E-84-631. These surveillance reports include the following:

QA inspection requirements, plans, checklists, inspection reports and audits

Engineering and Design Change Requests

Nonconformance and Disposition Reports

Seismic, vendor, and environmental qualifications

FMAC "Final Report of an Independent Review of Nine Mile 2 Related NRC CAT Inspections and SALP Report and Niagara Mohawk Identified Deficiencies".

Based upon the foregoing actions implemented in response to CAT Team Inspection Violation B-2, this item is closed.

2.12 (Closed) Construction Deficiency Item 85-00-24. This item relates to a construction deficiency in which Niagara Mohawk QA, during a surveillance inspection, identified unsatisfactory soldering connections that were previously accepted by a Field Quality Control inspector. The nonconforming solder connections were found in Reactor Water Cleanup and Recirculation Control Board Panel 2 CEC*PNL602. This deficiency was reported to NRC in accordance with 10 CFR 50.55(e) by letter dated August 23, 1985.

Investigation and analysis of the problem by the licensee revealed that the improper acceptance of this panel was attributable to one FQC inspector.

The NRC inspector reviewed the following licensee actions taken to resolve this issue.

1. Complete 100% re-inspection of all solder inspections performed by the problem inspector. This involved recalling and re-inspecting work covered by 22 previous inspection reports.

2. Verifying the performance of other FQ inspectors by surveillance inspection of 20 of their completed inspections of solder work.

3. Evaluating the adequacy of the training program used in training and qualifying FQ inspectors to inspect soldered connections including updating and retraining courses for the inspectors.

4. Reworking all identified unsatisfactory solder connections.

5. NMP-2 site QA Evaluation and Verification Report of Documentation and Supporting Inspections dated July 16, 1986 relative to the subject 50-55(e) construction deficiency item.

The solder connections in Panel 2 CEC*PNL602 which led to this construction deficiency item were inspected by the NRC inspector in addition to similar connections in panels 2 CEC*PNL601 and 2 CEC*PNL871. No unsatisfactory solder connections were observed.

This item is closed.

2.13 (Closed) Unresolved Item 50-410/83-08-02. This item relates to a discrepancy between the NMP-2 commitment to Regulatory Guide 1.100 August 1977 and IEEE 344-1975 and FSAR commitments on Page 3.10B-2 relative to the seismic qualification of certain equipment within the GE scope of supply.

The inspector verified the licensee's corrective actions taken to resolve this discrepancy by Amendment 22 page 3.10B-2 of the FSAR dated November 1985 which now clarifies in paragraph 3.10.2.1B "Methods of showing NSSS Equipment Compliance with IEEE 344-1975 and Regulatory Guide 1.100".

This item is closed

2.14 (Closed) Construction Deficiency Item 50-410/86-00-04. Cooper supplied standby diesel generator 2 EES*EG 61 did not meet its 10-second starting requirement due to the slow retraction of the fuel control cylinder. This cylinder is extended in the fuel-off condition and is retracted in the fuel-on condition by a combination of air pressure and an internal compression spring. The actual starting time was 13 seconds for the first start and less than 10 seconds for successive starts. This deficiency was reported to NRC in accordance with 10 CFR 50.55(e).

Analyses of the problem by the licensee and the manufacturer revealed that the fuel cylinder liner material was being eroded by the harder compressor spring material causing galling and binding.

Corrective actions taken by the licensee were to replace the fuel control cylinders on both Division I and II emergency diesels with harder Armaloy lined cylinders provided by the manufacturer to resolve this problem.

The inspector confirmed the licensee's documentation of the replacement including NMPC-QA Evaluation and Verification of the replacements.

This item is closed.

2.15 (Closed) Construction Deficiency Item 50-410/86-00-07. This deficiency is related to an excessive vibration problem with the low pressure fuel oil supply lines on the Division I and II standby emergency diesel generators (EDG). This vibration led to a pin hole leak in the Division I 2 EGS*EG1 fuel oil line. This deficiency was reported to the NRC by the licensee in accordance with 10 CFR 50.55(e) on May 8, 1986.

Evaluation of the deficiency and its causes by the licensee and the EDG supplier (Cooper) led to replacement of the damaged fuel oil lines on both the Division I and II EDG units and to the installation of plastic coated fuel line support brackets. This work was completed by the licensee under Engineering Design and Coordination Reports C46953 and C47192.

The inspector verified the work performed to correct this deficiency by physical inspection of Division I EDG 2 EGS*EG1 and by a review of the completed E&DCR reports including the site QA Evaluation and Verification Report.

This item is closed.

2.16 (Closed) Violation Item 50-410/86-08-02. This 10 CFR 50, Appendix B, item relates to violations of licensee FSAR and Electrical Specification E061A Class 1E cable separation procedure requirements. The inspector had identified Class 1E electrical cable 2EGPNGX001 on the west side of the control building at the control room elevation of cable penetration 2WX564G01 which did not have sufficient separation from non-division class cables out of penetration 2WC564N02.

The inspector found that the licensee had recently performed work to the penetration seals which required slackening of cables in the penetration area which led to the cable separation violation. The inspector confirmed the licensee's corrective action by a physical inspection of cable separation in the areas of the violation. The inspector found that the licensee had achieved the required separation of the cable identified in the violation and eight additional cables by the installation of Sil-Temp fire wrap and metal barriers.

This item is closed.

2.17 (Closed) Violation 50-410/86-13-08. Licensee specification C081 for instrument installation required that instrument lines shall be tagged with identification marking on both sides of a wall or floor. Contrary to this the inspector identified three instances where instrument lines were not properly identified on either side of their drywell penetration.

The inspector reviewed licensee actions taken to resolve the problem as follows:

1. Specification C081 was revised to permit identification tagging of instrument lines outside the drywell to be approximately 6 feet from the penetration in the vicinity of the excess flow check valve. The specification was further revised so that instrument lines passing through the biological shield wall need be tagged only outside the wall and lines underneath the suppression pool water level need not be tagged.

2. The licensee under Engineering and Design Change Request F13539A performed work to tag all instrument lines both inside and outside the drywell in accordance with the revision to specification C081A.

The inspector performed a random audit of licensee identification tagging of the instrument lines by inspection of the following lines inside the drywell containment: 2ISC-750-340-2, 2ISC-750-311-2, and 2 ISC-750-335-3. No discrepanices were observed. The inspector also reviewed the NMPC Site QA Evaluation and Verification of satisfactory completion of the tagging in accordance with specification C081A, Revision 5 and E & DCR F13539A.

This item is closed.

2.18 (Closed) Construction Deficiency Items 82-00-17 83-00-03, 83-00-07, 83-00-17. These construction deficiency items are Environmental Qualification failures of operational components in the post LOCA Hydrogen Recombiner units supplied by Rockwell International. These items and their reporting are summarized as follows:

Item	Description	Report to NRC
82-00-17	Barton Pressure Transducer Models D4R29098	10 CFR 21 by letter 10/21/82 10 CFR 50.55(e) by letter 11/19/82

83-00-03	Square D Disconnect switch P/N 9422-RC-1	10 CFR 21 by letter 11/3/82 10 CFR 50.55(e) by telephone 1/26/83
83-00-07	Microswitch P/N 12TSI-2	10 CFR 50.55(e) by letter 9/1/83
83-00-17	ITE Gould Ciruit Breaker P/N EF-3-3015	10 CFR 50.55(e) by letter 3/26/83

The inspector reviewed the Rockwell qualification report 290QR000031, dated October 16, 1985, and the warranty of the Hydrogen Recombiner unit including modifications and replacement components to meet the Environmental Qualification requirements of IEEE 323-1974.

The inspector verified actions taken by the licensee in accordance with Rockwell Technical Services Bulletin 82ESG-8933 for modifications needed for environmental qualification. The modifications were as follows:

Item	Modification Description
82-00-17	Replace Barton pressure Transducer with qualified Gould series 3200 Transducer
83-00-03	Modify disconnect switch electrical circuitry to eliminate the disconnect switch
83-00-07	Modify the microswitch electrical circuitry to eliminate the microswitch
83-00-17	Modify the circuit breaker electrical circuitry and components to replace the circuit breaker with qualified Gould A4J10 fuses and 60356J fuse blocks.

The inspector reviewed the licensee final verification of the 50.55e Hydrogen Recombiner Corrective Actions Implementation Report No. E 86-00051 dated January 29, 1986. The report verified both equipment modifications and drawings revision to reflect the changes. The inspector verified equipment modifications by inspection of the Division 2 Hydrogen Recombiner Unit and power supply cabinet and also confirmed the equipment and system drawing revision.

This item is closed.

2.19 (Closed) Unresolved Item (50-410/83-08-04). This item is related to the seismic qualification of the Gould supplied Class 1E Motor Control Centers (MCC) and to certain wiring deficiencies within the MCC units. The wiring deficiencies were previously addressed and corrected by the licensee and are closed out in NRC inspection report 85-44.

The inspector found that the licensee had addressed the seismic qualification question by requiring that Wyle Laboratories conduct additional seismic tests with MCC units simulating the installations at NMP-2. The seismic qualification tests report disclosed the need for additional support brackets within the MCC units and properly welding the MCC Unit bases to the floor sills.

The inspector reviewed the licensee's Seismic Certification Report and inspected the licensee's installation of the additional seismic supports and base welding in accordance with the seismic qualification report. The inspector also reviewed licensee site QA Evaluation and the Verification report for seismic qualification dated January 20, 1986.

This item is closed.

2.20 (Closed) Construction Deficiency Unresolved Item 50-410/85-00-29. This item relates to an improperly sized excitation impedance matching resistor in the HPCS diesel generator control circuitry. This deficiency was reported to the NRC in accordance with 10 CFR 50.55e by letter January 13, 1986. The licensee and the HPCS supplier (Stewart and Stevenson) evaluation disclosed that the resistor supplied with the voltage regulator would not permit sufficient signal adjustment to the generator exciter to achieve the full 2600kw 1950kvar rated output of the generator. Optimization of the impedance matching resistor led to replacing the 50 ohm with a 25 ohm resistor.

The inspector reviewed licensee documents covering the change including DR 07441 (replacement), QCIR 2-86-1584 and 2-86-2145 (Q-C inspections), and PR 01689 (revision of drawings). The inspector also verified the resistor replacement including qualification, location and mounting.

This item is closed.

2.21 (Closed) Construction Deficiency Item 86-00-10. This construction deficiency relates to cracks in Bendix supplied Division I and II emergency diesel generators fuel injector delivery valve holder fittings (P/N 10-328469-3). This deficiency was reported by the licensee in accordance with 10 CFR 50.55(e) by letter on May 30, 1986. Examination and analysis of the problem by the licensee revealed that the fittings were not made in accordance with the design drawing. An improper radius of the fitting created excessive stress in the fitting at a sharp edge causing the cracking.

Bendix supplied proper replacement fittings. These were inspected by the licensee and installed. The inspector reviewed the licensee documentation of the replacement and the site QA Evaluation, Verification and acceptance of the replacement.

This item is closed.

2.22 (Closed) Construction Deficiency Item 86-00-12. This contruction deficiency relates to improperly fitted air start valve seat inserts for two valves in the Division I emergency diesel generator. It was reported to NRC by the licensee in accordance with 10 CFR 50.55(e) on June 25, 1986. These valve seats are supplied by Cooper Energy Services as an integral part of the cylinder head.

The valve seat inserts on cylinders 3 and 7 were found to be loose (one due to an undersize and one due to an oversize fitting problem). The licensee inspected and tested all the remaining air start valve seats inserts in both division 1 and 2 diesels and found them to be acceptable. The deficient valve seats inserts were replaced with proper fitting inserts.

The inspector reviewed the licensee's documentation of the inspection and replacement and reviewed the Site QA Evaluation, verification and acceptance of the replacement.

This item is closed.

2.23 (Closed) Unresolved Item 86-13-10. This item relates to Stone and Webster (SWEC) Balance of Plant ESF Actuation Logic diagrams 12177-LSK-27-19G and 19H in which SWEC identifications corresponding to the GE identifications were not correlated. (The inspector had previously verified that SWEC had correlated all other similar documents with both the GE and SWEC identifications). The inspector confirmed licensee actions taken to correct this deficiency through Engineering Change Notices ECN 602, 606 and 607.

This item is closed.

2.24 (Closed) Construction Deficiency Item 50-410/86-00-03. This deficiency is related to factory installed jumpers across reactor protection "Thermal High Trip output relays K19 and K20. These jumpers would inhibit reactor protection system response to a thermal trip. This deficiency was reported to the NRC by the licensee in accordance with 10 CFR 50.55(e) on March 26, 1986.

Evaluation of the safety consequences of the loss of thermal trip were made and reported by GE letter dated April 24, 1986. GE concluded that "this condition would not have adversely affected the safety of operation of the plant at any time throughout the expected

lifetime of the plant were it to have remained uncorrected. It is therefore recommended that Niagara Mohawk Power Corporation act on this conern as not reportable per 10 CFR 50.55(e)". The licensee advised NRC accordingly on April 25, 1986.

The inspector reviewed licensee actions taken to correct the problem including GE Field Deviation Disposition Report K61-4895, NMP-2 Deficiency Report 09955 and Engineering and Design Coordination Report E & CDR C46438 which removed the jumpers thus enabling the RPS thermal trips.

This item is closed.

2.25 (Closed) Construction Deficiency Item 84-00-46. This deficiency relates to licensee identified incorrect wiring of torque switches on Clow Corporation supplied Limitorque valves. These deficiencies were reported to the NRC in accordance with 10 CFR 50.55(e) by letter dated May 17, 1985.

The inspector reviewed the following licensee documentation of the deficiencies, investigations, and correction of the problems.

-- Engineering and Design Coordination Report (E&DCR) F 20,541

-- Nonconformance and Disposition Report No. 11,892

-- Inspection Reports of work performed under E & DCR F20,541 - Reports E5A83 102 and E5A48845

-- Closed E & DCRs F20,532 and F12,709 which provided the drawing changes for the Limitorque changes in N & DR 11,892

-- License site QA Evaluation and Verification Report dated July 3, 1986 in which the correction disposition was found complete and acceptable.

This item is closed.

2.26 (Closed) Construction Deficiency 86-00-15. This construction deficiency relates to a problem with the moderate - energy line crack (leak) detection temperature switches which are used to respond to an air temperature rise resulting from a leak in the RHR system. The licensee found that the response time for these switches is too long to detect and isolate moderate energy cracks within the time frame consistent with the equipment qualification analysis. This deficiency was reported to the NRC in accordance with 10 CFR 50.55(e) on July 8, 1986.

The inspector reviewed the following licensee documentation of the evaluation, modifications, and QA verification of the modifications.

1. SWEC letter 9N2-18,898 dated May 23, 1986 and Problem Report dated May 12, 1986. These documents are the basis of the "Description of the Problem and Analysis of Safety Implications".

2. SWEC E&DCR Y04011A which provided the engineering directions to replace the existing temperature switches with faster response PYCo units.

3. SWEC Inspection Report 16A80902 which shows acceptable replacement in accordance with E&DCR Y04011A.

4. NMP-2 site QA Evaluation and Verification documentation of the Correction of Construction Deficiency 86-00-15 dated August 13, 1986.

Based upon the licensee's corrective actions this item is closed.

2.27 (Closed) Construction Deficiency Item 86-00-16. This deficiency relates to improperly-installed GE - supplied PYCo temperature sensing elements which are used to detect pipe line breaks (leaks) in the RHR, RCIC, RWCS and MSS systems. These detectors were installed enclosed within pipe sleeves that prevent air from directly impinging upon them. At the time of qualification, these elements were exposed to air. Early detection of pipe line breaks and their early isolation are essential to minimize blowdown which could expose safety-related equipment to temperatures and pressures outside their environmental qualification envelope.

This deficiency was reported to NRC in accordance with 10 CFR 50. 55(e) on July 10, 1986.

The inspector reviewed the licensee's analysis of the deficiency, corrective actions taken, and QA/QC verification and acceptance as contained in the following documents.

1. SWEC Letter Report of the 50.55(e) problem to Niagara Mohawk dated July 2, 1986.

2. SWEC E & DCR 203135 analysis and report of the problem PYCo type thermocouples dated June 6, 1986.

3. SWEC E&DCR Y18911B, Y18935 and Y1835B which provided the corrective actions. This included relocation of temperature elements, cutting/relocating supports and/or cutting a section of the pipe insulation to expose the sensing elements to air.

4. QA/QC inspection and acceptance of completed work for E&DCR's in 3 above.

Based upon the licensee's corrective actions, this item is closed.

2.28 (Closed) Construction Deficiency Report 84-00-36. This deficiency was related to the operation of curtain-type fire dampers supplied by Pacific Air Products. During operability tests for QA-Category II &-III dampers, it was noted that some dampers failed to satisfactorily close under air flow and pressure conditions. The licensee, therefore, evaluated similar dampers in category-I systems. In order to verify the operability of dampers in category-I a test program was implemented. Of the fifty-one (51) dampers tested under this program, forty-four were found satisfactory. The remaining seven required modification. The modification was completed and the dampers were successfully tested to indicate proper operability.

This item is closed.

2.29 (Closed) IE Bulletin 80-BU-16 relating to potential misapplication of Rosemount transmitters with either A or D output codes. This was perviously closed as a construction deficiency item in inspection report 50-410/82-12.

This item is closed.

2.30 (Closed) Finding (86-08-04) relating to damaged instrument tubing K117 and impulse line of 2RHS * PDT24B. The licensee has performed the corrective actions through Deficiency Report #21062. The inspector verified that the licensee's training program offers added emphasis for employee awareness to preclude similar act of negligence. Moveover, the startup organization has committed to perform a final walkdown prior to fuel load to assure that instrument tubing is free from any damage.

This item is closed.

2.31 (Closed) Finding 86-08-05 relating to noncompliance with slope requirements in installation drawings. The licensee has re-inspected 65% of all line segments for the Reactor Pressure Vessel level and recirculation system and performed corrective actions/analysis to confirm the absence of a negative slope and effective positive slope. General Electric has identified the RPV level and Recirculation system to be most sensitive to slope requirements. FDDRs KG1-2724, 0688, 0701, 0708, 0448 provide adequate justification and corrective action to alleviate the above concern.

This item is closed.

2.32 (Closed) IE Bulletin No. 86-BU-02 relating to the erratic behavior of Static O Ring differential pressure switches belonging to series 102 and 103. The licensee does not utilize the above referred type of Static O Ring pressure switches.

This item is closed.

2.33 (Closed) IE Circular 80-CI-16 relating to operational deficiencies in Rosemount Model 510 DU trip units and Model 1152 pressure transmitters. The licensee has clarified from GE, the supplier that two Rosemount model 510DU trip units were reworked by the manufacturers. This was the only remaining concern identified by inspection report 82-12.

This item is closed.

2.34 (Closed) Construction deficiency 86-00-06 relating to loose conduit fitting that connects environmental seals to the various instruments. The licensee has modified the installation away from the travel direction and tightened the loose fittings. The NRC inspector reviewed the corrective actions performed under Noncomformance Disposition Report #16884, 14791 and verified the field installations. No discrepancies were observed.

This item is closed.

2.35 (Closed) Unresolved Item 50-410/86-13-09. This item relates to licensee actions required to verify scram pilot valve voltages, to confirm the selection of Electrical Protection Assembly (EPA) trip settings, and Technical Specification allowable voltage values in order to assure protection of the scram solenoids within the 105-125 VAC tolerance range. The inspector confirmed licensee action taken as follows:

-- Scram pilot valve voltages have been verified, voltage calculations 12177 EC-125 Revisions 2 and 3 further verify that the EPA voltage trip settings as shown in the technical specification will provide adequate protection for the scram pilot solenoids within the specified voltage tolerance range of 105 to 125 VAC for all conditions of operation.

-- Technical Specification Paragraph 4.8.4.5 has been revised to provide allowable voltage values for all conditions of operation.

-- Licensee actions taken appear to provide assurance that the scram pilot solenoids are adequately protected.

This item is closed.

2.36 (Closed) Unresolved Item 85-03-02 relating to unqualified flow transmitters and lack of documentation to indicate that manufacturer corrective action has been performed.

The licensee has completed the corrective actions in replacing flow transmitters with the qualified Rosemount 1153 transmitters. The inspector reviewed documents N&D Nos. 12134, E&DCR #F02057 and verified field installations at random.

NMP-2 has the following procedures to document unqualified equipment and track the corrective actions.

PP.76 Control of SWEC Supplied Equipment requiring qualification.

QS.15.1 Nonconformance and Disposition Report.

QS.14.2 Inspection Report System.

This item is closed.

2.37 (Closed) Construction Deficiency 86-00-17 relating to cracked contact levers on NAMCO EA180 limit switches mounted on MSIV.

The licensee has done a complete inspection of all Category I NAMCO EA170 and EA180 series of limit switches. All the cracked levers were replaced. Engineering & Design Coordination Report #C4112B documents the corrective action.

This item is closed.

2.38 (Closed) Unresolved Item 86-18-04 pertaining to the NRC Electrical, Instrumentation and Control Systems Branch (EICSB) site audit of January 7,8 & 9, 1986. The purpose of the site visit was to verify that the installation of electrical instrumentation and control equipment conforms to applicable design criteria regarding phyical separation between redundant safety related circuits and between safety-related and non-safety related circuits. In addition, the site review included verification that the actual installation was consistent with the staff's understanding of the design based on applicable FSAR schematics and diagrams.

Specific concerns were identified by the NRC EICSB staff in six areas for followup by Region I personnel as follows:

1. Verification that the one inch and (as applicable) six inch separation is maintained between non divisional cabling and divisional cabling and between different divisional cabling within panel nos. 602, 603, 608B, 852, 880A, 880B, 880C & 880D.

The inspector reviewed Deficiency Report nos. 13124, 19045, 17421, 17420 and Quality Control Inspection Report nos - (QCIR) 2-86-6637, 2-86-5225, 2-86-5965, 2-86-5970 and 2-86-6032. Identifying corrective actions taken to correct separation deficiencies. In addition, a visual observation of work was performed by the inspector to verify corrective actions.

Panel no. H13-6088 internal separation is exempt from meeting the literal requirements of Regulatory Guide 1.75 per General Electric document no. 304A2638 Revision 0, sheet no. 33 and licensee procedure no. E-062A, section 8.2.9 line 8.47 -8.50 and FSAR item 8, Table 421.47-1 Amendment 17.

This item is closed.

2. Verification of RRCS divisional cabling separation of 1 inch between channels A and B of Division 1 and channels A and D of Division 2.

Addressed in item 1 above (Panel 602/603).

3. Verification of nomenclature associated with RCIC System trip units located in Panel 629.

The inspector reviewed Deficiency Report No. 12193 identifying problem marker plates and replacement with correct marker plate per E&DCR #C-46469. The marker plate was revised per GE FDDR No. KG1-4941 Revision 0 and GE engraving drawing No. 137C6497 Revision 3.

This item is closed.

4. Verification that conduit and cabling designations within Remote Shutdown Panel are correct.

The inspector reviewed the Nonconformance and Disposition Report (N & D) No. 11545 identifying nonconformities in color coding of Division and non-division conduit and improper location of marker sleeves on right bank of switches No. SW2-2RSSN81 for Remote Shutdown Panel 405. The verification of the corrective action per E&DCR #F-40545 included application of GE FDI-TYLR marker tapes. The switch marker sleeves were determined to be acceptable with engineering authorized "use-as-is".

This item is closed.

5. Verification of Installation of acoustic monitoring system, scram discharge instrument volume and the turbine first stage pressure transmitters.

   The inspector reviewed vendor level switch drawings and GE drawing 159C4361 change 1 & 2 verifying installation of scram discharge volume instrumentation. For the turbine first stage pressure transmitter the inspector verified that the installed pressure transmitter was 2MSS * PT16C&D. The acoustic monitor has been installed. Preoperational test No. 86 was performed with the test data reviewed and approved by SORC on April 24, 1986.

   This item is closed.

6. Verification of nomenclature utilized in main steam line flow transmitter instrument racks.

   The inspector reviewed GE drawings EK-401G, M; FSK-3-1A, H and design specification No. 22A5257 identifying design requirements for locally mounted instruments of the nuclear steam supply system and loop diagram No. 2MSS-A & B identifying the mark Nos. for instruments of the main steam line flow verifying nomenclature used is consistent with applicable designations.

   This item is closed.

2.39 (Open) Construction Deficiency 86-00-14. This deficiency relates to possible insufficient control voltage present at some 120 VAC and 125 VAC control device terminals such that the devices may not operate when considering the minimum design voltages at the distribution system.

The inspector confirmed that the licensee had performed a control circuit length verification study in response to INPO Finding DC 3-1, item C in order to evaluate the terminal voltages available for operation. In performing the control circuit length verification study the following parameters were considered:

-- Minimum voltage required for the operation of the device on equipment connected to the circuit

-- Minimum voltage available at the power source

-- Cable size and length

As a result of the study, the licensee concluded that some circuits exhibited excessive voltage drop to the powered devices. In order to provide adequate voltage, the licensee either modified the circuit to reduce electrical resistance or used interposing relays.

The inspector reviewed licensee engineering and design change requests Y07801, Y07801B, Y07801E, and Y07804 which covered the modifications to assure adequate control voltage. All work on these E&DCRs has been completed evaluated and verified by NMP-2 Site QA except for work on the RCIC system under E&DCR Y07804. To prevent recurrence of this problem NMP-2 engineering will review all future MOV, SOV and MOD circuits to ensure that the minimum voltage requirements of these devices are satisfied.

The licensee has committed to complete E&DCR Y07804 relating to the RCIC system prior to initial criticality. It is noted that this system serves no safety function prior to initial criticality. This item remains open pending completion of E&DCR Y07804.

2.40 (Closed) Construction Deficiency 83-00-04 relating to an inconsistency of separation criteria notes in the General Electric wiring/fabrication drawing. The licensee has documented the above deficiencies in Nonconformance Reports 53, 55 & 56. The inspector reviewed the relevant excerpts of the following documents to verify the licensee's corrective actions and compliance to the criteria.

- Reference:

1. FSAR Ch.8 Section 3 Amendment 26

2. FSAR Table 421.47-1 Amendment 17

3. Specification for Electrical Installation & Field Modification to PGCC, E062A Rev.2 dated December 2, 1985

4. GE FDDR #KG1-3898

5. Surveillance Report 85-00887

6. GE letter NMP2-5024 dated May 3, 1983

Ref: 2 note 2 covers the use of Sil-Temp tape as a barrier within the panel wherever separation distance cannot be mentioned. The use of flexible/rigid conduit or steel barriers as a separation barrier is covered in note. 3 of the same reference. Based on the above, the NRC inspector randomly inspected corrective actions in H13-P601 & P602. No deficiencies were found.

This item is closed.

2.41 (Closed) Construction deficiency 84-00-14 relating to nonconformances to separation criteria in Power Generations Control Complex (PGCC). The nonconformances extended to between divisions, between channels, and between divisions and channels.

In order to facilitate installation, compliance and verification General Electric has clarified their separation requirements in a criteria document titled "Power Generation Control Complex Separation Practices Handbook" dated February 21, 1985. This is a supplement to "Specification for Electrical Installation & Field Modification to PGCC" E062A, Rev.2, dated December 2, 1985.

The inspector reviewed the following documents:

1. Nonconformance Report 53, which documents the subject problem.

2. Test Report on Electrical Separation & Verification 1.613-5001 Rev.B. by Wyle lab.

3. Verification and Closure of Nonconformance Report No.53.

As per FSAR table 421.47-1 Note 2 and 3 (Amendment 17), NMP2 uses Sil Temp tape, flexible/rigid conduit or steel enclosures as a barrier whenever separation distances cannot be maintained. Based on the above documents the inspector randomly selected cabinets H13-P609, 631 & 602 and verified the installation against the revised separation/compatibility table in GE FDDR #3898.. No deficiencies were observed.

This item is closed.

2.42 (Closed) Construction deficiency 84-00-32 relating to lack of separation distance/barriers/isolation devices in HPCS switchgear and control panels. The inspector verified the selected corrective actions performed under GE FDDR KG1-2396, 2398 and 2974 based on the following documents:

1. Specification for Electrical Installation E061A Rev.11 March 21, 1986.

2. FSAR Chapter 8 Section 3 Amendment 26

3. FSAR Table 421.47-1 Amendment 17.

No deficiencies were identified.

This item is closed.

3.0 Instrumentation Installation (Components and System)

3.1 Installation Work Observation

The inspector examined work performance pertaining to the installation of safety related instruments in the High Pressure Core Spray System to determine whether the requirements of applicable specifications, NRC requirements and licensee commitments were made in the areas of instrument installation, procurement, and quality control inspection.

3.2 Items examined for this inspection include:

a) Safety related HPCS pump suction and discharge pressure transmitters 2CSH*PT-102 and PT-105 (GE No. E22-N052 and N051) mounted in GE instrument rack H22-P024 in the Reactor Building at elevation 175' Southeast corner.

b) Safety related HPCS flow transmitters 2 CSH*FT-144 and 145 (GE No. E22-N005 and N056), HPCS flow, both located in GE instrument rack H22-P024 in the Reactor Building at elevation 175', Southeast corner.

c) Safety related suppression pool water level transmitters 2CSH* LT-123 and LT-124, located in the Reactor Building at elevation 175', Southeast corner.

d) Safety related HPCS B1F venturi flow element 2CSH*FE-105, located in the HPCS pump room in the Reactor Building at elevation 175'.

e) Stone and Webster flow diagram FSK-27-4B "High Pressure Core Spray" Revision 6, dated April 29, 1985.

f) Stone and Webster flow diagram FSK-27-4C "High Pressure Core Spray" Revision 7, dated April 29, 1985.

g) Stone and Webster Specification No. NMP2-C011M for Pipe Insert Type Venturi Flow Sections, addendum 5 dated February 17, 1982 and data sheet for 2CSH*FE-105 (16" BIF Model 0183-16).

h) GE Drawings No 188C 7360, Specification for Transmitters E22-N005,-N051,-N056, Sheet 1 Revision 5, dated June 24, 1985, sheet 2 & 3, Revision 3, dated June 15, 1984.

i) GE Drawings No. 184 C4775 Level Transmitters with Pressure Seal System, transmitters E22-N055C and N055G; Sheets 1 and 2, Revision 4 dated May 9, 1984.

j) GE Drawings No. 163 C1563, Gage Pressure Transmitters, E22-N052, sheets 1 and 2, Revision 10 dated July 16, 1981.

k) Isometric drawings for flow transmitters 2 CSH*FT 104 and FT 105:

12177-DK-410ED, Revision 3 dated January 24, 1986.
12177-DK-410EB, Revision 3 dated January 29, 1986.
12177-DK-410EC-1, Revision 1, dated July 27, 1983
12177-DK-410EE-2, Revision 2, dated November 9, 1984.

l) Isometric drawings for level transmitters 2 CSH*LT 123 and LT 124:

12177-DK-410DH, Revision 1, dated November 14, 1984.

m) Isometric drawings for pressure transmitters 2 CSH*PT 103:

12177-DK-410DY-2, Revision 2, dated June 10, 1986.
12177-DK-410DZ-1, Revision 1, dated July 25, 1983.
12177-DK-410EA-1, Revision 1, dated July 25, 1983.

n) Isometric drawing for pressure transmitter 2 CSH*PT 105:

12177-DK-410DS-4, Revision 4, dated January 29, 1986.
12177-DK-410DT-1, Revision 1, dated July 29, 1983.
12177-DK-410DU-1, Revision 1, dated July 29, 1983.
12177-DK-410EJ-1, Revision 1, dated July 29, 1983.

3.3 Findings

The inspector noticed that one Rosemount conduit seal (model No. 353C1) was installed for each of the transmitters identified in section 3.2.a, b, and c. The licensee stated that all of these conduit seals were installed per Stone and Webster Engineering and Design Coordination report E & DCR No. F02590B, and the Raychem splices (part of the conduit seal) were installed in accordance with Raychem Instruction WCSF-N, Revision 1 dated August 1983. Section 2.1.6 of the Raychem Instruction requires a minimum of 2 inches installed seal length over qualified wire insulation for areas subject to accident conditions and a minimum of one inch for non-accident conditions. Stone and Webster E&DCR No. C-03975A identified all "accident areas". The instruments identified in section 2.2 a, b and c are located in non-accident areas.

The inspector measured each of the seal lengths over the qualified wire insulation and found each to be approximately two inches except those for level transmitters 2 CSH*LT 123 and LT 124, each of which has a length of approximately three inches.

The inspector verified the mounting configurations of the instruments, flow direction of the instrument valves and the required slope of the impulse lines.

Within scope of this inspection, no unacceptable conditions were identified.

4.0 Instrument Cable and Termination-Work Observation

4.1 The inspector observed work performance, partially completed work and completed work pertaining to the installation of instrument cables and terminations to determine whether the requirements of the applicable specifications, instruction and procedures are being met in areas relating cable type and size, routing, raceway identification and cable terminations.

4.2 Items examined for this determination include:

a. Instrument cable routing and termination from level transmitters 2CSH*LT-123, LT-124; flow transmitters 2CSH*FT-104 and FT-105 and pressure transmitters 2CSH*PT-105 and PT-102 in the Reactor Building at elevation 175' to GE instrument rack H13-P625A located in the instrument room.

b. GE elementary diagrams 807E172TY, sheets 5 and 7, for transmitters 2CSH*FT-104 and FT-105, 2CSH*LT-123 and LT-124, pressure transmitters PT-102 and 105, Revision 19, dated May 31, 1985.

c. Stone and Webster wiring diagram 12177-EE-11GB-2 for level transmitters 2CSH*LT-123 and LT-124, Revision 2, dated August 16, 1984.

d. Stone and Webster wiring diagram 12177-EE-4M-3 for instrument rack 2CES*RAK024, Revision 3, dated January 18, 1985.

e. Stone and Webster connection diagram 12177-EE-3WB-3 for transmitters 2CSH*LT-123 and LT-124, Revision 3 dated June 16, 1986.

f. Cable pull record for cables: 2CSHNPX001 dated November 16, 1983, 2CSHNPX004 dated November 16, 1983, 2CSHNPX006 dated September 14, 1984, 2CSHNPX007 dated September 14, 1984

g. Termination records for the "from end" of cables 2CSHNPX001 dated September 21, 1983, 2CSHNPX004 dated September 21, 1983, 2CSHNPX006 dated October 1, 1984, 2CSHNPX007 dated October 1, 1984

h. Termination records for the "to end" of cables 2CSHNPX001 dated November 9, 1983, 2CSHNPX004 dated November 9, 1983, 2CSHNPX006 dated October 1, 1984, 2CSHNPX007 dated October 1, 1984

i. Cable installation QC inspection reports E4009708 for 2CSHNPX004, E5A43384 for 2CSHNPX001, E5A8312 for 2CSHNPX001 & 2CSHNPX004, E4078694 for 2CSHNPX001 & 2CSHNPX004, E5A40610 for 2CSHNPX001 & 2CSHNPX004, E5A43020 for 2CSHNPX006 & 2CSHNPX007

E5A42951 for 2CSHNPX006 & 2CSHNPX004, E6A44308 for 2CSHNPX001 & 2CSHNPX004, E4077045 for 2CSHNPX001 & 2CSHNPX004, E4009706 for 2CSHNPX001 & 2CSHNPX004, E6A43435 for 2CSHNPX001 & 2CSHNPX004, E6A43114 for 2CSHNPX001 & 2CSHNPX004

j. Cable termination inspection reports

E5A40630 for 2CSHNPX001FR, E5A43298 for 2CSHNPX006FR, & 2CSHNPX007FR E5A45852 for 2CSHNPX001TO, E5A49358 for 2CSHNPX006TO, & 2CSHNPX007TO.

4.3 The inspector verified the correctness of the terminations, traced sections of the raceway and verified the raceway numbers. Within the scope of this inspection no unacceptable conditions were identified.

5.0 Documentation to Perform Corrective Action on Safety Related Instrumentation

During the plant tour the inspector identified a significant number of Rosemount Transmitters with loose side covers. Discussions with the licensee indicate that the tightening of the side covers is deferred pending completion of startup activities. However, the licensee indicated that all Rosemount transmitters with loose covers were being tracked on a Deficiency Report. The inspector requested a copy of the Deficiency Report listing and randomly selected six Rosemount Transmitters with loose side covers for verification of the Deficiency Report. Two of the Rosemount Transmitters selected, 2RHS*PT114 & 2CSH*PT105 were not included on the Deficiency Report. Deficiency reports were not generated as required by Nine Mile Point 2 procedures N2-SAP-112A "Deficiency reporting System"/N2-SAP-121 Deficiency Tracking System".

Procedure No. N2-IMP-EQM-@005 requires that specific maintenance activities be performed when removing or tightening Rosemount and Transmitter side covers. The subject Deficiency Report No. 17783 lacked specific guidance for verifying that the Rosemount Transmitters are restored to the environmentally qualified state. The licensee was informed that this was a violation of 10 CFR 50, Appendix B, Criterion V.

6.0 Facility Tours and Meetings

The inspectors made routine tours throughout the facility to observe work in progress, housekeeping, status of construction, and actions taken in the resolution of previously identified items.

7.0 Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable or items of noncompliance.

Unresolved item(s) are discussed in Details, Section 2.0.

8.0 Exit Meeting

The inspector met with licensee and construction representatives (denoted in paragraph 1.0) at the conclusion of the inspection on August 15, 1986 at the construction site.

The inspector summarized the scope of the inspection, the inspection findings and confirmed with the licensee that the documents reviewed by the team did not contain any proprietary information. The licensee agreed that the inspection report may be placed in the Public Document Room without prior licensee review for proprietary information (10 CFR 2.790).

No written material was provided to the licensee by the team.