

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 84-05

Docket No. 50-410

License No. CPPR-112 Priority -- Category A

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

Facility Name: Nine Mile Point, Unit 2

Inspection At: Scriba, New York

Inspection Conducted: March 5 - April 7, 1984

Inspectors: Robert A. Gramm
R. A. Gramm, Resident Inspector

5/12/84
date

date

date

Approved by: S. J. Collins
S. J. Collins, Chief, Reactor Projects
Section 2C, DPRP

5/16/84
date

Inspection Summary:

Inspection March 5-April 7, 1984 (Report No. 50-410/84-05)

Areas Inspected: Routine inspection by the resident inspector of work activities, procedures and records relative to electrical terminations; piping and pipe supports; NMPC quality assurance activities; ITT Grinnell audit activities; design control of non-seismic installations; and followup to construction appraisal team inspection. The inspector also reviewed licensee action on previously identified items and performed plant inspection tours. The inspection involved 122 hours including weekend reviews by the resident inspector.

Results: One violation was identified: Inadequate design control for non-seismic installations (paragraph 8).

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DETAILS

1. Persons Contacted

Niagara Mohawk Power Corporation (NMPC)

W. D. Baker, Construction Engineer-Liaison
C. G. Beckham, Q.A. Manager-Construction
J. L. Dillon, Q.A. Supervisor-Nuclear Construction
D. Dise, Vice President of Quality Assurance
J. T. Janas, Senior Q.A. Technician
E. Klein, Assistant Manager Project Engineering
B. R. Morrison, Quality Engineering Manager
W. Morrison, Project Director
F. J. Osypiewski, Q.A. Engineer
D. Pike, Assistant Manager Engineer
J. P. Ptak, Manager of Construction
K. Rafferty, Q.A. Supervisor
M. Ray, Assistant to Project Director
C. Terry, Engineering Manager

Stone and Webster Engineering Corporation (SWEC)

S. K. Agarwal, Principal Licensing Engineer
T. T. Arrington, Superintendent of F.Q.C.
J. C. Beverage, Q.C. Inspection Supervisor
J. Burgess, Acting Q.A. Manager
B. Charlson, Manager of Projects
S. W. Crowe, Assistant Superintendent F.Q.C.
D. E. Hall, Senior Q.C. Engineer-Electrical
R. Hyslop, Licensing Engineer
E. J. Magilley, Assistant Superintendent F.Q.C.
M. P. Oleson, Assistant Superintendent Engineering
M. G. Pace, Project Q.A. Manager
A. H. Rovetti, Supervision Engineer
D. Smith, Principal Structural Engineer
R. L. Wagner, Construction Manager
P. Visalli, Assistant Project Engineer

ITT Grinnell Industrial Piping, Inc. (ITT)

R. Banks, Documentation Supervisor
D. Giguere, Q.C. Manager
T. Grubbs, NDE Supervisor
J. May, Q.A. Manager
J. Padgett, Q.C. Supervisor
L. Pela, Q.C. Technician Supervisor
F. Zinkevitch, Q.A. Director

Reactor Controls, Inc. (RCI)

R. Hall, Q.C. Supervisor

2. Plant Inspection Tours

The inspector observed work activities in-progress, completed work and plant status in several areas during general inspection tours. The inspector examined work for any obvious defects or noncompliance with regulatory requirements or license conditions. Particular note was taken of the presence of quality control inspectors and quality control evidence such as inspection records, material identification, nonconforming material identification, housekeeping and equipment preservation. The inspector interviewed craft personnel, supervision, and quality inspection personnel as available in the work areas.

The inspector observed the installation of pipe support BZ-19BS. The planner package for the support contained Engineering and Design Coordination Report (E&DCR) C18593 which directed the pipe clamp to be placed directly over a field weld. The E&DCR further directed that the clamp should be removed during hydrostatic testing which is consistent with ASME requirements. The inspector reviewed ITT General Field Engineering Procedure-4 "Pipe Inspection, Walkdown, As-Builts and Turnover" and Field Quality Control Procedure 4.2-3-5 "Verification of Installed Materials" which define the walkdowns conducted prior to system hydro-testing. The above procedures will ensure that all system welds will be visually accessible during the conduct of hydro-tests.

The inspector reviewed Regulatory Guide 1.7i which pertains to welder qualification for limited accessibility welding. He then reviewed FSAR statements on the subject of limited accessibility welding contained in sections 1.8, 4.5, 5.2 and 6.1. The current wording within Table 1.8 of the FSAR implied that limited accessibility welds will be volumetrically examined which is inconsistent with site practice. The inspector questioned the licensee on this apparent discrepancy. Further review of SWEC licensing degree of compliance documentation identified that Table 1.8 statements regarding compliance to Regulatory Guide 1.7i were in error. The licensee has committed to amend Table 1.8 of the FSAR and has reviewed that section in its entirety to ensure the accuracy of the FSAR information. No other discrepancies were identified by the licensee review.

The inspector examined electrical cabinets within the control room and the relay room areas. He noted that the internal wiring has been inspected to identify divisional separation problems. Each inspected cabinet was observed to have a copy of a SWEC Nonconformance and Disposition (N&D) report attached to the exterior which describe the separation violations identified by Field Quality Control (FQC). The inspector examined the cabinet interiors and noted that some cabinets contained reject tags attached to the wiring while within other cabinets the deficiencies were not similarly identified. The licensee was questioned relative to the inconsistency in identifying the nonconformances. The inspector was provided copies of

FQC training records which provided direction that if a cabinet contained less than 3 separation nonconformances that reject tags would be applied. For greater than 3 nonconformances no reject tags would be used, in either case the N&D fully documents the internal wiring nonconformances. The inspector has no further questions on this issue as the FQC personnel had been provided consistent guidance in regard to tagging the nonconforming conditions.

The inspector observed modifications performed to the Control Rod Drive restraint beam assembly. The craft were noted to have the necessary E&DCRs and GE design change documents, namely: E&DCR C-17591; E&DCR C-19259; E&DCR C-17899 and FDDR-KG1-0166. Further, since the work involves a previously inspected item, the requisite Punch List Item Report (PLIR) P-FR-0166 was also generated. The inspector ascertained that the work was proceeding in accordance with the engineering directions.

The inspector observed a large quantity of partial pulled Class 1E electrical cables. These cables are temporarily coiled throughout the plant raceways. The inspector examined cable 2RHSBYX603 at elevation 207 of the Reactor Building. The cable appeared to be coiled in a manner which does not meet the minimum bend radius requirements. The licensee was requested to ascertain if the cable was properly coiled. Pending licensee examination of the cable in question and further NRC inspection of similarly coiled cables for other detrimental conditions, this item is unresolved. (84-05-01)

3. Licensee Action on Previously Identified Items

- a. (Closed) VIOLATION (83-02-06): ITT craft performed work outside of the planner scope and work performed without the appropriate planner. The work was stopped on the activities in question. ITT generated Deviation Report #3948 to address the use of non-specified methods to correct the ovality and Corrective Action Report #582 was issued to solicit preventive actions concerning the conduct of work without the appropriate planner package. ITT conducted training sessions with all supervisory personnel (Superintendent, General Foreman, Foreman) to inform them that the requisite planner package has to be available prior to starting a work activity and that engineering direction contained within the planner cannot be deviated from without written engineering authorization. The weld on isometric 66-49 Field Weld 2 was repaired and radiographed. The inspector examined the weld quality documentation records and reviewed the radiographic film, no defects were observed in that film. Plant tour inspections by the inspector have not identified further examples of similar process control problems.
- b. (Closed) UNRESOLVED (83-10-03): Approval by SWEC of a sub-contractor procedural inconsistency. The inspector reviewed Johnson Controls Inc.

(JCI) procedures QAS-1601-15 "Control of Nonconformance" and QAS-1701-6 "Corrective Action Request". The problem cause codes of these procedures have been revised to eliminate the differences which existed previously. This item is closed as trending and assignment of non-conformance cause codes is accomplished in a consistent manner.

- c. (Closed) UNRESOLVED (83-12-05): RCI ultrasonic test records improperly filled out. Licensee review of the ultrasonic NDE of the nozzle safe end modification identified that a dual beam transducer had been used. The calibration standard identification indicated that the appropriate tri-metallic material had been used. The UT equipment was recalibrated and the resultant Distance Amplitude Curve matched that generated earlier. Corrected forms reflecting the actual calibration material have been incorporated into the plant records.
- d. (Closed) VIOLATION (83-12-07): Class 1E cable moved without generation of FQC records. The inspector reviewed SWEC Inspection Report E3007539 which documents the replacement of the cable into the proper cable trays. The inspector reviewed SWEC QC training records for conduct of partial cable pulls and proper report generation. The SWEC inspection plan for cable pulls has been revised to require that QC examine for a second time portions of previously inspected cable to assure that the routing is proper. The inspector noted that SWEC QC re-inspected 919 cables in congested areas and identified 5 other cases of misrouted cables. These conditions were identified in inspection reports and rectified. This item is closed as the above corrective actions will serve to preclude recurrence of this type of deficiency.
- e. (Closed) FOLLOWUP ITEM (83-16-03): High strength bolt installation. SWEC verified acceptable installation torques of the bolts in question. The inspector was informed that tightening of shop bolts in the field would be performed to the same requirements as field bolting. The inspector was informed by the licensee that the marks on the shop bolts resulted while the nearby field bolts were torqued.
- f. (Closed) UNRESOLVED (83-17-08): Adequacy of duct support fillet weld. The inspector reviewed AWS D1.1 8.15.1.7 which allows fillet welds to be up to 1/16 inch undersize for not more than 10% of the weld length. This item is closed as the weld in question fulfills the AWS criteria.

4. Electrical Terminations

- a. The inspector reviewed the following documents which pertain to the termination of electrical cables:
 - FSAR
 - IEEE336 "Installation, Inspection, and Testing Requirements for Class 1E Instrumentation and Electric Equipment at Nuclear Power Generating Stations"

- Specification E061A "Electrical Installation"
- QS 10.53NM "Cable Terminations and Connections"
- QAIP N20E061AFA026 "Cable Termination Connection and Splice"
- CMP 9.1 "Insulated Cable Terminations, Splices and Connections"
- Comstock Foreman's Book Section 18

The inspector accompanied SWEC QC personnel during the in-process inspection of several high voltage terminations. The installations were made in accordance with the above listed requirements. The following cables were examined during the termination process:

- | | |
|---------------|------------|
| -- 2EHSDYL204 | IRE4006376 |
| -- 2EHSDYL205 | IRE4006376 |
| -- 2EHSBYL001 | IRE4006313 |
| -- 2EHSBYL003 | IRE4006313 |

No violations were identified.

5. Piping and Pipe Supports

- a. The inspector observed welding operations, documentation of welding materials and verified weld planner package sequence of operations during surveillance of pipe welding activities. The following attributes were spot-checked during the inspection for compliance to ASME Section III and Specification P301C:

- weld preparation
- alignment
- component traceability
- weld material identification
- hold point status verification

Specifically, the inspector examined the following weld joints and associated spool pieces for drawing and specification conformance:

<u>System</u>	<u>Isometric</u>	<u>Field Weld</u>
Reactor Water Cleanup	9-14	12/Repair 1
High Pressure Core Spray	25-9	8
Low Pressure Core Spray	26-5	12
Residual Heat Removal	66-18	11
Residual Heat Removal	66-26	10

The inspector had no questions regarding the observed welding activities.

- b. The inspector observed SWEC welding activities on a ASME Class 3 small bore line installation (2HVK-001-87-3/FW006/2HVK-CDB). The weld data sheet and weld material requisition forms were reviewed by the inspector. He noted that the valve serial number, 86397-3-13, had been

written on the weld data sheet as the heat number. He observed the actual component heat code was hard marked as 2L13R12. The inspector was further informed that these small bore valves are routinely disassembled such that the teflon valve seats are not damaged by the welding heat input. He was further informed that FQC inspects 20% of the reassembled valve installations for design conformance. The inspector has an unresolved concern as to whether valve HVK*146 has been properly reassembled and whether the present level of FQC sampling inspection of the valve reassemblies is adequate. (84-05-02)

c. The inspector reviewed the following documents which pertain to the spent fuel pool heat exchanger installation:

- FSAR section 9.1.3
- ASME Section III Subsection NF
- Specification P221X "Spent Fuel Pool Cooling Water Heat Exchangers ASME III; Safety Class 3"
- Drawing ES-53P-7

The inspector examined heat exchanger 2SFC*E1B relative to the above design documents. He noted that the heat exchanger was temporarily supported by some dunnage and slings. He observed that some ITT pipe support material in the form of tubesteel had been used as dunnage. The excessive weight of the heat exchanger could result in an overstress condition of the tubesteel material. Upon notification, ITT placed hold tags on the tubesteel and initiated IR9166. However, the concern remains relative to the improper use of permanent plant material in the above manner. This item is unresolved pending verification of the QA category of the tubesteel and implementation of actions to avoid recurrence of this condition. (84-05-03)

The inspector requested the licensee to provide the ASME weld control planners for the NF supports to be used on heat exchangers 2SFC*E1A/E1B. This item is open pending receipt of the weld planners. (84-05-04)

No violations were identified.

6. NMPC Quality Assurance Activities

The inspector reviewed NMPC QAP 19.01 "Preparation of Quality Assurance Checklists". The checklists are prepared by Quality Engineering to provide detailed information to direct the performance of QA surveillance activities. The inspector noted that the checklists are to be generated on a discipline basis: civil (c); electrical (e); mechanical (m); welding NDE (w); and general (g).

The inspector reviewed the following checklists for conformance to the criteria outlined in the above procedure and the incorporation of applicable inspection requirements:

- C001 Protective Coating Within the Containment Structure
- C002 Procurement and Storage of Drilled In Expansion Type Concrete Anchors
- C003 Procurement and Storage of Coating Materials
- C004 Installation of Drilled In Expansion Type Concrete Anchors
- C005 Grout Placement
- E001 Conduit Installation Verification
- E002 Cable Tray Installation
- E003 Cable Installation Verification
- E004 Cable Termination, Connection and Splices
- E005 Field Raceway Hanger/Support
- E006 Electrical Equipment Pre-Installation Verification
- E007 Instrumentation Loop Surveillance Checklist
- E008 Verification of Preliminary Testing
- E009 Crimping Tool Verification
- E010 Visual Inspection for FDI/FDDR Changes CID DNLS
- E011 PGCC Prefabricated Cable Installation
- E013 Nonconformance and Disposition Reporting
- E014 FDI/FDDR Changes to CID Cables-Megging
- E015 Qualification and Certification of Personnel
- E016 PGCC Solder In-process and Final
- M001 JCI Receiving Inspection
- M002 ITT Receiving
- M003 Work Packages Category I
- M004 Inspector Certification ITT
- M005 Inspection of Installed Pipe Supports
- M006 RCI Receiving Inspection
- M007 ITT Grinnell Hilti Bolt Installation Inspection
- M008 Johnson Control Drilled In Concrete Expansion Type Anchors
- M009 Examination of Ductwork-HVAC
- M010 In-place Storage Diesel Generators
- M011 Mechanical Equipment Alignment
- M012 Storage of Material and Equipment
- M013 Piping Installation for Low Pressure Carbon Dioxide Fire Protection System
- M014 ITT Grinnell Tension Requirements for Hilti Bolts
- M015 SWEC Receiving Inspection
- M016 JCI Inspector Training and Qualification
- M021 Hydrostatic Test of Fire Protection Piping
- M022 Hydro Test of Water Spray, Sprinkler and Foam Fire Protection
- M023 In place Preventive Maintenance
- M024 Storage of Materials and Equipment-JCI

--	M025	Housekeeping for Permanent Plant Material and Equipment
--	M026	Housekeeping-JCI
--	M027	Concrete Anchors Installed for Fire Protection System
--	M028	Identification and Control of Materials, Parts and Components for Pipe Rupture Restraints
--	M029	SWECs Program for Control and USE of M&TE
--	M030	FQC Involvement Computer Scheduled Preventive Maintenance
--	W001	Radiographic Examination Surveillance-ITT
--	W002	Radiographic Examination Surveillance-RCI
--	W003	In-process and Visual Surveillance of Welding AWS D1.1-77
--	W004	Magnetic Particle Examination Surveillance-ITT
--	W005	Liquid Penetrant Examination Surveillance-ITT
--	W006	Surveillance on Shielded Metal Arc Welding Section III-SWEC
--	W007	Surveillance on Shielded Metal Arc Welding-RCI
--	W008	ASME III Surveillance of Shielded Metal Arc Welding-ITT
--	W009	Surveillance of Gas Tungsten Arc Welding Section III-SWEC
--	W010	Surveillance of Gas Tungsten Arc Welding on Section III-RCI
--	W011	Surveillance of Gas Tungsten Arc Welding/ASME III-ITT
--	W012	Liquid Penetrant Examination Surveillance-SWEC
--	W013	In Process and Visual Surveillance of Welding AWS D1.1-75
--	W014	Magnetic Particle Examination Surveillance-RCI
--	W015	Liquid Penetrant Examination Surveillance-RCI
--	W016	Surveillance of Gas Tungsten Arc Welding on Section III-JCI
--	W017	Surveillance of Shielded Metal Arc Welding on Section III-JCI
--	W018	Magnetic Particle Examination Surveillance-RCI
--	W019	Liquid Penetrant Examination-JCI
--	W020	Weld Material Control Surveillance Checklist-JCI
--	W021	Radiographic Examination Surveillance-ITT

The inspector reviewed the Surveillance log for compliance to QAP 19.01. He observed that 240 NMPC QA surveillances had been performed since the inception of the revised surveillance program.

The inspector was informed by the NMPC QA manager-construction, that the site audit group has been formally established. That audit group will be comprised of five personnel to perform QA audits on the site contractors. The first such audit is scheduled for the week of April 16 covering ITT. The inspector will monitor the conduct of the NMPC QA site audits.

7. ITT - Grinnell Audit Activities

The inspector observed the conduct of an ITT audit conducted from March 20 to March 30, 1984. The audit scope was formulated to cover piping and pipe support hardware installations. The audit team was composed of seven specialists in welding, NDE and pipe hanger installation. The inspector reviewed the audit checklists for completeness. The auditors examined fifty-five safety related pipe supports; one pipe whip restraint; piping runs covering seven isometric drawings; and in-process work controls. The audit detected hardware nonconformances on items which had

been previously accepted by ITT. The audit generated twelve corrective action requests and five comments. Nine of the Corrective Action Requests were closed during the conduct of the audit. The inspector was informed that ITT audits will cover in greater depth the field hardware installations. This approach is in response to deficiencies previously identified by the NRC within inspection report 50-410/83-18.

8. Design Control of Non-Seismic Installations

The inspector reviewed the following documents which describe design control aspects for non-seismic installations which are located within seismic Category I areas of the plant:

- FSAR sections 1.8 and 3.2
- Regulatory Guide 1.29 "Seismic Design Classification"
- FSAR Review question F260.51
- Project Procedure 84 "Seismic Evaluation and Documentation of Non-Nuclear Safety Related Components in Nuclear Safety-Related Areas"
- SWEC Regulatory Guide Position 1.29 "Seismic Design Classification"

The licensee has stated the intent to comply to the guidelines of Regulatory Guide 1.29 within the FSAR. Regulatory Guide (RG) 1.29 paragraph C.2 and C.4 state that non-seismic items should be designed such that their potential seismic failure will not detrimentally impair the operability of plant safety related systems and further that pertinent QA aspects of 10 CFR 50, Appendix B apply to these non-safety installations.

Within Table 3.2-1, the licensee describes the seismic/QA criteria applied to plant systems. The inspector notes that a FSAR review question has been released which seeks clarification on the R.G. 1.29 non-safety item aspects.

The inspector reviewed Project Procedure 84 which documents the seismic design approach for non-safety items located within Category I structures. The design approach is to either seismically support the non-safety item or analyze their potential seismic failure and document that it would not result in damage to safety related items. The inspector notes that PP 84 states that Diesel Generator building hanging equipment has been pre-engineered and/or evaluated against the seismic design criteria.

The inspector has identified two instances to the licensee in which items located within Category I areas of the plant were not designed in accordance with R.G. 1.29. Specifically, inspector followup item 83-12-01 documented within inspection report 83-12 questioned the seismic design of partition walls located adjacent to Class IE electrical equipment within the control room and unresolved item 84-01-07 documented within inspection report 84-01 questioned the installation of a non-seismically designed crane located immediately over the emergency diesel generators. The licensee subsequently reported both items to the NRC as Construction deficiency reports 83-00-22 and 84-00-13 respectively.

The failure of the licensee design control program to assure that the applicable seismic design basis was translated correctly into drawings and specifications for the overhead crane and interior wall partitions is a violation of 10 CFR 50, Appendix B, Criterion III. (84-05-05)

The inspector notes that NMPC QA has issued Corrective Action Request 17 which questions the existence of programmatic installation controls devoted to non-safety items designed to seismic Category I standards.

The inspector further acknowledges the proposed licensee corrective actions to this concern:

- redesign of the interior wall partitions to seismic standards.
- evaluate the crane for response to seismic input.
- to expand the types of non-safety items which must be evaluated under the auspices of PP 84.
- to perform a re-review of all Category I areas to ensure QA Category II items are properly designed relative to R.G. 1.29 requirements.

9. Followup to Construction Appraisal Team Inspection

During the conduct of the inspection, the inspector monitored the corrective actions implemented by the licensee in response to the Construction Appraisal Team (CAT) inspection. The CAT inspection findings are documented within inspection report 50-410/83-18 issued on January 31, 1984.

The licensee has implemented actions to address document control deficiencies. The inspector observed that a dual posting system has been put into effect. Design changes are still manually posted on a drawing, however, a computerized system has additionally been established to track outstanding change documents. The inspector observed the backfit of the data into the computer base for the new system. The inspector notes that as of March 30, 1984 that the total site population of open work documents has increased to 15874.

The inspector was informed that inspection efforts continue in the PGCC cabinets for wiring separation problems. The inspector reviewed General Electric (GE) FDDR-KG1-2110 which promulgates clarification on the separation criteria. The licensee has determined that conduit runs will have to be provided for Reactor Protection System (RPS) cables outside of the control room to meet sub-divisional separation requirements.

The inspector observed the NMPC QA review of selected ITT radiographs. ITT had previously reviewed 100% of the film and documented the discrepancies identified. NMPC QA is in the process of performing a second level 100% review of the film and associated documentation. The majority of problems identified by NMPC to date have not been hardware oriented.

The inspector observed the pull test of several concrete anchor bolts at 100% of their design load. The anchor bolts had been previously inspected and were located on electrical, HVAC and pipe supports. There was no evidence of bolt slippage at the applied load.

The inspector was informed that all ITT manual liquid penetrant technicians have been terminated. A re-inspection was performed by ITT non-manual QC of all Main Steam Safety and Relief Valve lines to the suppression pool. The re-inspection found a high percentage of welds had not received adequate surface preparation to perform the liquid penetrant test. The inspector was further informed that some welds displayed code rejectable indications. All welds which had been previously penetrant tested were identified. The inspector noted that approximately 1575 safety related welds were to be reinspected. Additionally, approximately 3600 welds are currently inaccessible and will be addressed on SWEC Nonconformance and Disposition reports.

10. Unresolved Items

Unresolved items are matters for which more information is required in order to ascertain whether they are acceptable items, items of violations or deviations. Unresolved items disclosed during the inspection are discussed in paragraphs 2, 5b, and 5c.

11. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection. The inspector attended periodic meetings with the NMPC QA manager and project director to discuss the status of CAT corrective actions.