

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
Region I

Report No. 50-410/79-04

Docket No. 50-410

License No. CPPR-112      Priority --      Category A

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

Facility Name: Nine Mile Point Nuclear Station, Unit 2

Inspection At: Scriba, New York

Inspection Conducted: April 24-26, 1979

Inspector: A. A. Varela      6/4/79  
A. A. Varela, Reactor Inspector      date signed

Approved By: S. D. Ebner for      6-21-79  
S. D. Ebner, Chief      date signed  
Engineering Support Section  
No. 2, RC&ES Branch

Inspection Summary:

Inspection on April 24-26, 1979 (Report No. 50-410/79-04)

Areas Inspected: Routine, unannounced inspection by a regional based inspector, of reinforcing steel installation and cadwelding in primary containment exterior wall, record review of concrete placement in primary wall and reactor pedestal, observation of Vermiculite - cement backfill placement and review of requirements for the replacement of cadweld sleeves on primary containment liner knuckle plate, observation of general site activities in progress and follow-up on observations. The inspection involved twenty-four inspector-hours onsite by one NRC regional based inspector.

Results: No items of noncompliance were identified.

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Details

1. Persons Contacted

Niagara Mohawk Power Corporation

\*L. G. Fenton, Senior Site QA Representative (Acting)  
S. H. Haybrook, Senior Site Construction Representative  
\*I. S. Stupal, Construction Manager  
C. D. Terry, Manager of Nuclear Projects Engineering  
\*K. D. Ward, QA Engineer

Stone & Webster Engineering Corporation (S&W)

B. F. Gallagher, Senior Resident Engineer  
\*C. E. Gay, Superintendent, Field Quality Control  
\*C. E. Hilton, Superintendent of Construction  
\*J. E. Karr, Project Quality Assurance Manager  
J. Martin, Senior Buyer  
P. McAllister, Quality Control Inspector  
G. W. Page, Engineer  
\*J. E. Rogers, Chief Office Engineer  
R. Rudis, Quality Control Inspector  
J. Shoffner, Quality Control, Test Laboratory Supervisor  
T. Syrell, Quality Control Inspector  
C. Stewart, Quality Control Inspector, Batch Plant  
T. Vaughn, Assistant Superintendent Field Quality Control

Walsh Construction Company

W. Conklin, Assistant Superintendent  
J. Griffin, Cadweld Foreman

Chicago Bridge and Iron Company (CB&I)

T. J. Doherty, Project Welding and Quality Assurance  
Superintendent  
C. Hall, Project Superintendent  
A. Spears, Welding Supervisor

Northern Ready Mix Company

M. McCormick, Batch Plant Superintendent  
D. Stout, Batch Plant Operator



The inspector also interviewed other licensee and contractor employees during the inspection.

\*Denotes those present at the exit interview.

2. Plant Tour

The inspector made a tour of the site to observe work activities in progress, completed work, and status of construction. The inspector examined work items for any obvious defects or noncompliances with regulatory requirements and observed QC activities and evidence of quality control of the work. Specific activities observed by the inspector included replacement of Cadweld "B" sleeves on the containment liner (knuckle plate), placement of Vermiculite - concrete fill between screen well building foundation and excavated rock, reinforcing steel storage and bar bending, concrete test laboratory's instrument calibration and concrete batch plant maintenance. No items of noncompliance were identified.

3. Concrete Placement Record Review for Primary Containment Wall and Reactor Support Pedestal

Pertinent work and QC records were reviewed on construction observed during a previous inspection. Primary containment wall lift number five, pour number 1-122-017 P, involved 352 cu. yds. of 4,000 psi pumped concrete. The reactor support pedestal lift number four, pour number 1-122-005, required 130 cu. yds. of 4,000 psi pumped concrete.

The records were reviewed for conformance with:

- Nine Mile Point Station, Unit 2 PSAR, Appendix D
- Codes and Standards committed in PSAR sections on structures and concrete
- S&W Specifications No's. S203H, S203A and S203C for Concrete Testing Services, Mixing and Delivering Concrete and Placing Concrete and Reinforcing Steel
- S&W Construction drawings No. EC-30 and EC-40 for the primary reactor building wall and reactor support pedestal



- S&W QC Instructions and Procedures - QS-10.12, QS-10.13, QS-14.2, QAD-10.8 and QAD-14.3.

The inspector reviewed documents relative to the following:

	<u>Document Identification</u>	
	<u>Primary</u>	<u>Reactor Pedestal</u>
a. Concrete Preparation	IR #S-8023216	-8023210 -8022668
b. Delivery Placement and Testing	IR #S-8022695	-8022681
c. Concrete Curing	IR #S-8023020 IR #S-8023184	-8023018
d. Test cylinder compressive strength	Pour #1-222-017	Pour #1-122-005

No items of noncompliance were identified.

4. Observation of Rebar Installation and Cadwelding

On-going work was observed performed in reinforcing steel installation and cadwelding for the primary containment wall about elevation 230, three lifts above previously placed concrete. The inspector determined that work and inspection activities were accomplished according to applicable criteria identified in paragraph 3, above for these areas:

- Rebar and embedments - properly placed, clean and properly secured
- Rebar splicing - cadweld splices made by qualified operators and inspected by qualified QC personnel (these completed splices made by operator #62 on #18 size rebar were inspected by the NRC inspector and found conforming to specified requirements - numbers 0534, N888 and 0534)

No items of noncompliance were identified.





5. Requirements for Vermiculite - Cement Backfill Placement

The term "Vermiculite - Cement Backfill (V-C)" means a commercial zonalite sterilized concrete aggregate mixed with a Portland cement binder in lieu of sand and gravel aggregate. It produces a lightweight insulating concrete.

S&W job specification G002P, Structural and Random Fill, was revised September 6, 1977 by E&DC Report No. F0025. This addition to the specification identifies direction for the placement of V-C backfill for use between concrete and rock around the reactor containment mat and other designated areas. The E&DCR requires that placing tests be performed, reported to Lead Structural Engineer for qualification and approval. Wooden mockups for placement tests were conducted to verify that the specified mix will provide the required density using jobsite equipment and expected placing conditions. Mixing, transporting and placing instructions published by W. R. Grace and Company, suppliers of this air entrained aggregate is a technical requirement.

Other requirements observed in job specification G002P for the V-C mixture are as follows:

- Wet Density, shall not exceed 62 p.c.f.
- Slump, is not pertinent
- Batching and Mixing, proportions 1 to 8 by volume of cement to vermiculite, (cement and water are batched by weight)
- Test Aggregate gradation conformance to ASTM C-332 and report on fineness modulus and unit dry weight on sample of material received
- Placing Tests and Material Tests During Placement, for each placement of 15' length or for each 50 cu. yds.: 2 unit weights, 6 compression test cylinders, air and concrete temperatures, wet density of compression test cylinders, gradation and fineness modulus of aggregate grab-sampled from batch bin.



- Placing Instructions
- Curing and Protection
- Inspection and Protection
- Inspection Requirements and Documentation, requirements assigned to Field QC

No items of noncompliance were identified in above requirements.

6. Observation of Vermiculite - Cement Backfill Placement in Screen Well Building

Work was observed performed in mixing, transporting, testing, placing, and curing of Vermiculite - cement backfill for the rock slot of the screen well building wall foundation, identified by Fill Release Card No. S-1-E-B. A four cubic yard cement-water mix in proportion of 1 to 2 by weight was central batched, placed in mixer truck, transported to vicinity of placement area where 56-4 cubic foot bags of Zonolite brand Vermiculite were added to the cement-water mix while truck drum was rotated slowly. Unit weight tests, temperature and compression test cylinders were made prior to placement and an additional unit weight test and temperature was taken of the second truck mixture. The placement of 13 cubic yards in two cubic yard buckets discharged into wooden chutes appeared adequately supervised and controlled. Finishing, curing and protection conformed to job specifications. The inspector was informed by the licensee that V-C backfill placements had previously been made surrounding all of the containment base mat, and the control room building foundation. No items of noncompliance were identified.

7. Unresolved Item: Report of Vermiculite - Cement Initial Placing Tests, Material for Qualification and Engineering Approval of Mix

The inspector requested report of initial placing tests, material for qualification and engineering approval of the Vermiculite - cement mix. This is required by job specification G002P, identified in E&DCR F00025. The inspector was informed the report test data was not available at the site but would be obtained for review at a subsequent inspection.



The inspector in telecon with licensee on May 3, 1979 requested clarification of an apparent conflict in the specifications regarding V-C mix proportion by volume. Vermiculite is specified to be in 4 cubic foot bags marked 19 lbs. net weight. This is a discrepancy since the loose unit weight of the dry aggregate is reported to be 7.1 pcf average density, and (ASTM C-332 Table 2 requires 6 pcf minimum). This is unresolved item number 79-04-1.

8. Cadweld B Sleeve Replacements on Containment Liner Knuckle Plate

As identified in inspection report 79-02, Details Paragraph 15 Cadweld B sleeves shop welded to containment liner knuckle plate are required to be removed due to MT indications. The inspector reviewed these requirements for Cadweld sleeve replacement by CB&I:

- S&W Specification Cadweld Sleeve Replacement, No. P283 B/1/3 of November 15, 1978
- CB&I Drawing #85940-21 revision 1, February 15, 1979
- CB&I Weld Procedure Specification WPS-E8018-C1 CAD/85940 revision 2, March 2, 1979
- CB&I QC Procedure Special Check List A 4.09
- S&W Surveillance Report, Cadweld Sleeve Replacement, IR #W-9015422

No items of noncompliance were identified.

9. Follow-up of Inspector Identified Problem

The inspector observed that the specific identification of Cadweld B sleeves being installed by CB&I to replace reject shop welded sleeves did not correspond with that in the S&W specification and purchase order, nor with Erico Catalogue number RB10M974. The latter identifies the proper sleeve as RBB-1892-JA which was specified and ordered. The sleeves received are marked B-1892-J. Resolution of the inspectors concern was obtained by S&W's Senior buyer, the inspector



and licensee personnel in telephone conversation with Erico's Mr. N. Bestor, who stated that no conflict exists between the catalogue number, material identification and identification of part received. No items of noncompliance were identified.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, or items of noncompliance. Unresolved items disclosed during the inspection are discussed in Paragraph 7.

11. Exit Interview

At the conclusion of the inspection on April 26, 1979, a meeting was held with representatives of the licensee and EC (denoted in Paragraph 1). The inspector summarized the results of the inspection as described in this report.

