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SUBJECT: Submits response to 970516 telcon RAI re restart following repair of weld overlay.Calculation re size of overlay,encl.

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TITLE: GL 94-03 Intergranular Stress Corrosion Cracking of Core Shrouds in B

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May 19, 1997
NMP1L 1222

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Subject: *Generic Letter (GL) 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping"*

Gentlemen:

By letter dated May 15, 1997, Niagara Mohawk Power Corporation (NMPC) indicated that a through-wall pin hole leak at a bimetallic weld (33-FW-22) in the Nine Mile Point Unit 1 (NMP1) Reactor Water Cleanup System (RWCU) had been discovered. This leak resulted from a 7/16" axial crack that was classified as Intergranular Stress Corrosion Cracking (IGSCC). NMPC proposed to repair this weld by performing a weld overlay to restore the structural strength of the weldment. The purpose of that letter was to request NRC approval of the weld overlay repair.

Based on information provided in our May 15, 1997 letter and by telephone conversation on May 16, 1997, the NRC approved restart of NMP1 following repair of the weld. Additionally, the NRC requested that additional information be provided via written communication. This letter provides that additional information.

Generic Letter (GL) 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping", was issued by the NRC on January 25, 1988 to make recommendations regarding the mitigation and identification of IGSCC. NMPC provided responses to GL 88-01 in the 1988 through 1991 time frame. By letter dated May 15, 1990 and June 24, 1991 the NRC issued its Safety Evaluations (SE) for GL 88-01 based on our responses. Included in the NRC's SE dated May 15, 1990 is the following statement:

> "As a reminder, GL 88-01 requires that if any cracks are identified that do not meet the criteria for continued operation without evaluation given in Section XI of the Code, NRC approval of flaw evaluations and/or repairs in accordance with IWB-3640 and IWA-4130 is required before resumption of operation. Please note that weld overlay repair is considered as a non-Code repair, which requires NRC approval."

270063

A018

Since this SE was issued, Code Case N-504, "Alternate Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping Section XI, Division 1", was written and endorsed by the NRC (i.e., referenced in Regulatory Guide (RG) 1.147). Code Case N-504 finds that the "acceptability of a defect in austenitic stainless steel piping may be established in accordance with IWB-3640 by deposition of weld reinforcement (weld overlay) on the outside surface of the pipe", provided that certain requirements are met. As stated in the May 16, 1997 telephone conversation, the weld overlay repair design for the RWCU system meets the requirements of N-504 with the following exceptions from items (f)(1) and (g)(2)(3) of the Code Case:

(f)(1) The Code Case requires that the full thickness length extends "axially at least $0.75\sqrt{Rt}$ beyond each end of the observed flaws where R and t are the outer radius and nominal wall thickness of the pipe". Because of physical restrictions, the overlay was extended as far as possible, until it butted up to the nozzle to heat exchanger shell weld. This resulted in less than a 0.25 inch reduction of the weld overlay length on the stainless steel end of the weld (calculated length, is 1.25 inches, achieved length is approximately 1 inch). Full overlay length was achieved on the opposite side of the crack tips.

(g)(2) (g)(3) An evaluation of flaw growth due to fatigue; as well as shrinkage effects on welds and components in the system affected by the weld reinforcement, will be performed. These evaluations will be completed approximately one month from plant restart and the results of the evaluations submitted to the NRC within the following 60 days.

It was also noted that an in service leak test in accordance with ASME Section IWA-5000 (the original code of construction for this system was ASA B31.1-1955) would be performed with the system at nominal operating pressure. (This test has been performed and was considered appropriate as this weld is non-safety related and outside the ASME Section XI boundary for pressure testing. An in service leak test in lieu of a hydrostatic test is sufficient to detect any leaks through the repaired area).

Although not specifically discussed in our May 16, 1997 telephone conversation, alternate methods of meeting elements of Code Case N-504 were used. The RWCU system is designed as non-safety related and meets ANSI B31.1. NMPC will meet Code Case N-504, items (c), and (k) by the use of alternate methods as follows:

(c) The performance of a liquid penetrant examination prior to the deposition of weld reinforcement was not performed because the pinhole is greater than 1/16" which would require the complete overlay defined in c(2) to be performed. Therefore, a weld overlay was performed in accordance with c(2). The area to be reinforced by overlay was first prepared by application of an initial weld

layer which was then examined as required by item (d) of the Code Case. The application of the initial layer effectively seals any potential indications in the overlayed area.

(k) Pipe supports near the repair area (primarily spring hangers) did not receive a VT-3. Because of the relatively small size of the overlay, no notable change in spring hanger position occurred. These pipe supports were marked and monitored for any relative change in spring setting from the application of the weld overlay. No recordable changes occurred. Because this is a non-ASME XI boundary, these pipe supports have not been visually preservice examined. No physical anomalies in the pipe supports were observed during the comparison in spring support settings.

The subject weld (33-FW-22) is a non-safety related, non-ASME Section XI weld. As this Code Case is written for "Alternate Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping Section XI, Division I", under strict compliance with the Code Case, it would not be applicable for this weld. Because the weld is not an ASME XI Class 1, 2, or 3 weld, neither an ASME Section XI repair plan nor a NIS-2 report will be generated for this repair. However, as previously discussed, the NRC's Safety Evaluation regarding our position on GL 88-01 indicated that weld overlay repairs would require NRC approval. Accordingly, as required by the NRC's Safety Evaluation, NMPC requested approval of this repair. NMPC is not seeking approval under the requirements of 10CFR50.55a

A diagram of the overlay repair and a description of the materials being used are provided in enclosed Figure 1. The analysis used to determine the size of the overlay is included as Attachment 1.

Very truly yours,

Martin J. McCormick Jr.
Vice President Nuclear Engineering

MJM/JMT/cmk
Attachments

xc: Mr. H. J. Miller, NRC Regional Administrator
Mr. B. S. Norris, Senior Resident Inspector
Mr. S. S. Bajwa, Acting Director, Project Directorate I-1, NRR
Mr. D. S. Hood, Senior Project Manager, NRR
Records Management

33-FW-22 WELD OVERLAY REPAIR

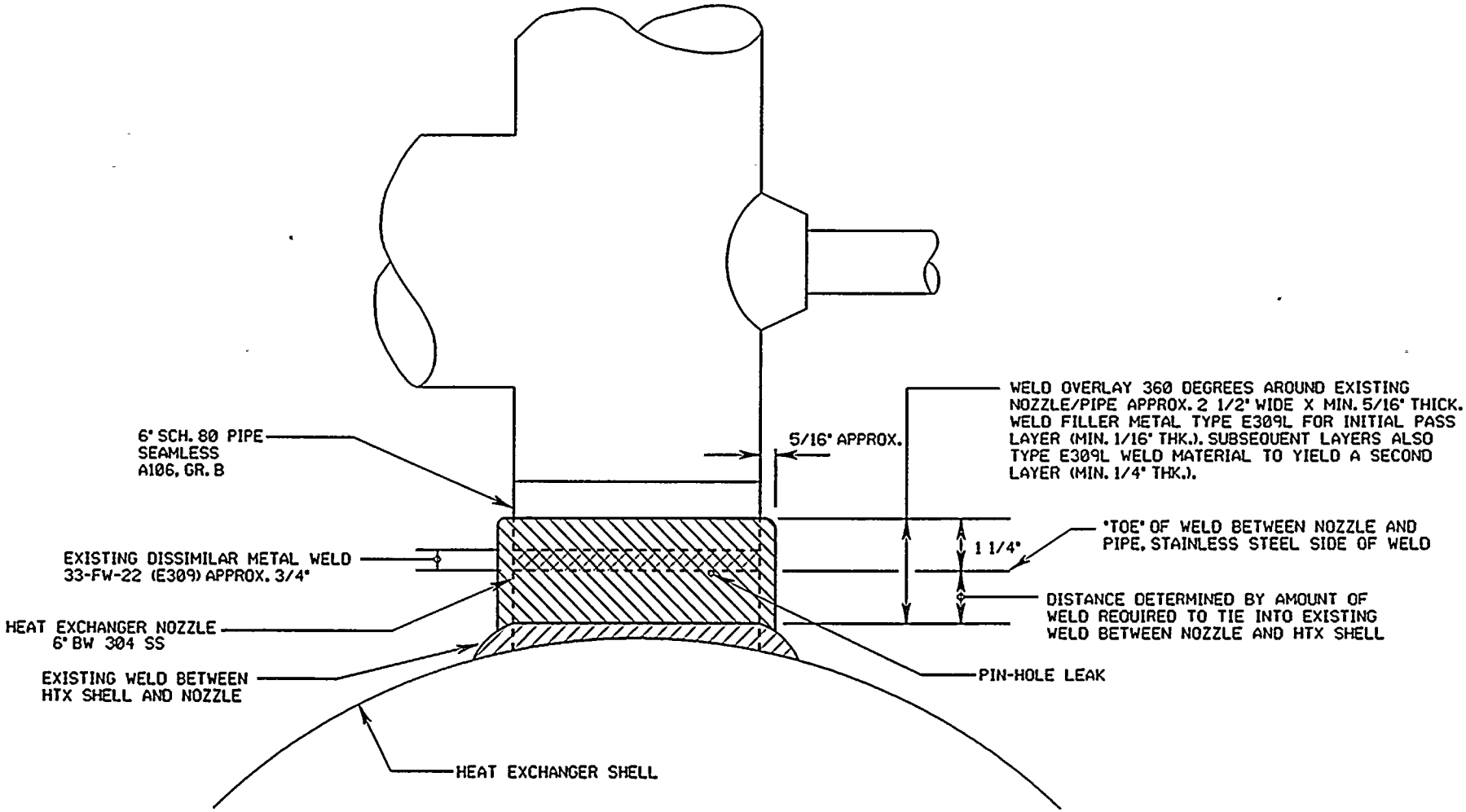

FIGURE 1

ATTACHMENT 1

NIAGARA MOHAWK NUCLEAR ENGINEERING	CALCULATION COVER SHEET	Page 1A(Next 2 1) Total 14 Last 13

NINE MILE POINT NUCLEAR STATION Unit (1, 2 or 0=Both) : 1__ Discipline : STRUCTURAL

Title	Calculation No.			
RWCU WELD 33-FW-22 OVERLAY DESIGN	S14-33M009			
	(Sub)system(s)	Building	Floor Elev.	Index No.
	33	RX	261	S14

Originator(s)
RANDY TRENCH (MPR)

Checker(s) / Approver(s)
PAUL KNITTLE (MPR), JIM NESTELL (MPR)

Accepted by CE Group CSS 5/16/97 / TDhee 5/19/97

Rev	Description	Design Change No.	By	Date	Chk	Date	App	Date
0	INITIAL ISSUE	N/A	RCT*	5/16/97	PK	5/16/97	JEN	5/16/97

* SEE PAGE 1 FOR MPR SIGNATURES

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General Reference(s) :
SEE SECTION 6.0

Remarks :
WELD OVERLAY REPAIR OF SUSPECTED IGSCC

Confirmation Required (Yes / No) : No See Page(s) :	Final Issue Status (APP / FIO / VOI) : APP	File Location (Calc / Hold) : Calc	Operations Acceptance Required (Yes / No) : No

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