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 TERRY,C.D. Niagara Mohawk Power Corp.
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 Document Control Branch (Document Control Desk)

SUBJECT: Forwards implementation of NUREG-0131, Rev 2 re position w/
 respect to austenitic stainless steel piping, per 880125 ltr.

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July 28, 1988
NMP2L 1151U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555Re: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Gentlemen:

Generic Letter 88-01, dated January 25, 1988, requested information regarding the implementation of NUREG 0313, Revision 2. The attachment to this letter provides Niagara Mohawk's position with respect to austenitic stainless steel piping at Nine Mile Point Unit 2.

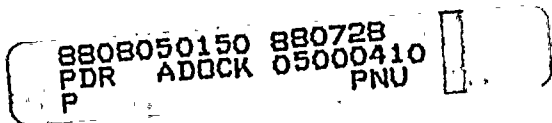
The information contained in the attachment does not include reactor vessel attachments or appurtenances, which will be provided at a later date.

Under separate cover, we are submitting an application for an amendment to the Technical Specifications to incorporate the requirements of this generic letter.

Niagara Mohawk will make the appropriate revisions to the Inservice Inspection Program Plan and the applicable site procedures to incorporate the requirements of the generic letter. These revisions will be completed prior to the first refueling outage which is scheduled for the Fall of 1989.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

C. D. Terry
Vice President
Nuclear Engineering and LicensingKBT/pns
5265G
Attachmentxc: Regional Administrator, Region I
Mr. R. A. Capra, Director
Ms. M. F. Haughey, Project Manager
Mr. W. A. Cook, Resident Inspector
Records ManagementA001
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of]
]]
Niagara Mohawk Power Corporation] Docket No. 50-410
]]
(Nine Mile Point Unit 2)]

AFFIDAVIT

C. D. Terry, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.



Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 28th day of July, 1988.


Notary Public in and for

Onondaga County, New York

DIANE R. KIMBALL
Notary Public in the State of New York
Qualified in Onondaga County No. 493503
My Commission Expires May 31, 1990

My Commission expires: May 31, 1990

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NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 2

DOCKET NO. 50-410

IMPLEMENTATION OF NUREG 0313, REVISION 2, "TECHNICAL REPORT ON MATERIAL
SELECTION AND PROCESS GUIDELINES FOR BWR COOLANT PRESSURE BOUNDARY PIPING."



In response to NRC Generic Letter 88-01, Niagara Mohawk initiated a thorough review of plant systems to identify those falling within the criteria of NUREG 0313, Rev. 2.

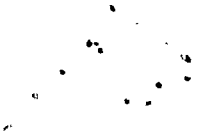
NRC Generic Letter 88-01 requires that all austenitic stainless steel piping, four inches or larger nominal diameter and containing reactor coolant at a temperature above 200°F during power operation, be reviewed for the augmented requirements of NUREG 0313, Rev. 2. Systems/components which exceed 200°F for extremely short periods of time (less than one percent of the total design lifetime) were not considered to meet this criteria.

Stainless steel systems at Unit 2 with a design temperature of 200°F or greater were initially considered for review. Niagara Mohawk's evaluation determined that two systems, Reactor Coolant (Recirculation) [RCS] and Reactor Water Cleanup [WCS], fell within the scope of Generic Letter 88-01. The two systems were reviewed and each weldment assigned an IGSCC category as directed by the generic letter.

In general, many of the materials and welds in the RCS and WCS systems can be classified as Category A. Classification of castings and weld filler materials having greater than 0.035% carbon, and water quenched wrought low carbon grades not having been subjected to a sensitization test were made as described in this report.

NUREG 0313 Rev. 2 provides that welds between non-resistant (i.e., greater than 0.035% carbon) castings and resistant pipe may be considered as Category A if they have not been subjected to extensive repairs that may have changed the residual stress pattern. While the generic letter does not define "extensive" as used in this context, it does state that the basis for this provision is the service experience of such welds, which have proven to be relatively free of IGSCC. Since this experience is based on actual production welds where each "typical" production weld receives several repairs before meeting final acceptance criteria, we consider that welds having three or fewer repairs should be classified as not extensively repaired, and thus Category A. Records of the number of repairs on these welds show that only one weld to a non-resistant valve body casting was subjected to extensive repairs. Based on the criteria in the generic letter, this was classified a Category D weld. All other welds between the resistant pipe and cast valves and pumps are considered Category A.

Weld filler material with carbon contents greater than 0.035% was used, for the most part, in the fabrication of components ordered as non-low carbon grades such as the RCS pumps and valves. Repair welds to the castings were subsequently solution annealed and, therefore, are Category A. However, appurtenances to the components such as vents and drains did not receive a subsequent solution heat treatment (and may also contain crevices in the form of partial penetration welds) and, therefore, would be classified Category G in accordance with the generic letter. Such welds, however, do not require Inservice Inspection (ISI) under ASME XI, except for a possible visual inspection of the component internal surfaces or a system pressure test and are not considered within the scope of Generic Letter 88-01. Therefore, no change to the ISI Program Plan is needed for these welds. Some filler metal with carbon contents between 0.035% and 0.040% was also used in field welds in the RCS. There is a discrepancy between the generic letter which only permits



up to 0.035% carbon, and ASME II Part C SFA 5.4 which permits the low carbon grades E308L and E316L to contain up to 0.040% carbon. NUREG 0313, Rev. 2, which forms the technical basis for the generic letter, in some cases refers to E308L and similar grades (i.e., no additional restriction on carbon content) as being adequately resistant to sensitization, and in other cases to E308L, E316L and similar grades with a maximum carbon content of 0.035% as being adequately resistant. NUREG 1061, which formulated recommendations later incorporated into Rev. 2 of NUREG 0313, does not place any requirements on the carbon content of weld filler material other than to confirm the acceptability of E308L (no additional carbon content restrictions) for corrosion-resistant cladding of weld areas in non-resistant piping. Since the duplex structure (austenite plus delta ferrite) is the weld metal's major defense against IGSCC, the 0.040% carbon limit of the SFA 5.4 material specification is adequate, and Niagara Mohawk considers it as meeting the intent of Generic Letter 88-01.

The stainless portions of the WCS, where this system ties in with the RCS, are fabricated with wrought 316L grades. These materials, basically 4-inch schedule 80, were not subjected to a sensitization test. They were, however, water quenched from the solution annealing temperature, which is a more positive mechanism than testing to ensure the absence of grain boundary carbide precipitation. Water quenching has been very effective, especially in low carbon grades, and water quenched material has not had any problem meeting A262-A when tested. Therefore, we consider that water quenched wrought low carbon grades of stainless steel meet the intent of Category A of Generic Letter 88-01, with or without a sensitization test.

All weldments within the scope of this review were designated as IGSCC Category A with the exception of field weld RCS FW A07. This circumferential weld between resistant piping and a non-resistant cast pump casing was repaired four (4) times. We have designated this weld Category D. It will be scheduled for augmented examination during the first refueling outage and every second refueling outage thereafter.

SUMMARY

- 1) Niagara Mohawk has taken appropriate actions during the construction of Nine Mile Point Unit 2 to mitigate IGSCC and provide assurance of continued long-term piping integrity and reliability. Therefore, we do not envision any piping replacement or other mitigation measures.
- 2) The Inservice Inspection program will be revised to require more frequent examinations of field weld RCS FW A07. The examination techniques and personnel qualification methods used for the volumetric examination of austenitic weldments will be qualified in accordance with the NDE Coordination Plan through the EPRI NDE Center in Charlotte, North Carolina. Niagara Mohawk does not intend to use any alternate plans, such as ASME Code Case N409 at this time.

If one or more cracked welds in IGSCC categories is detected, we will expand the sample examined in accordance with the staff position stated in the generic letter.



- 3) Under separate cover, we are submitting an application to amend the Technical Specifications to incorporate the staff requirements of this generic letter for schedule, methods, and personnel.
- 4) Plant Technical Specifications Section 3.4.3.2 related to leak detection conforms to the staff position stated in the generic letter to the extent practical. The 2 gpm increase in unidentified leakage was not included in the initial Technical Specifications when they were issued, and there is no need to revise the Plant Technical Specifications since there is only one service sensitive austenitic stainless steel piping weld inside the primary containment.
- 5) Niagara Mohawk will notify the Commission of any flaws identified that exceed the acceptance criteria of ASME Section XI, Subsection IWB 3500. This notification will include our justification for continued operation and/or our repair plans.

