



NIAGARA MOHAWK

GENERATION  
BUSINESS GROUP

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July 9, 1998  
NMP2L 1803

CARL D. TERRY  
Vice President  
Nuclear Safety Assessment and Support

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

RE: Nine Mile Point Unit 2  
Docket No. 50-410  
NPF-69

**Subject:** *Generic Letter 94-03, Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors*

Gentlemen:

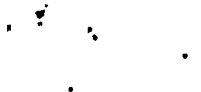
During Refueling Outage No. 6 (RF06), Niagara Mohawk Power Corporation (NMPC) conducted inspections of the Nine Mile Point Unit 2 (NMP2) core shroud. Our letter dated August 23, 1994 indicated that we would submit the results of these inspections once completed. The purpose of this letter is to provide these results as well as provide the evaluation performed to support continued operation of NMP2 for one operating cycle.

During RF06, ultrasonic inspection of four of the eight horizontal core shroud welds (H3, H4, H6 and H8) was conducted in order to determine if any evidence of cracking existed. The inspections were conducted in accordance with the Boiling Water Reactor (BWR) Vessel and Internals Project Shroud Inspection Guidelines, BWRVIP-01 and BWRVIP-03.

As a result of the inspections performed, significant cracking (> 10 percent of inspected length) was observed in the horizontal weld H4. Out of the total length examined (77.14 percent) for weld H4, 71.45 percent of the examined length was determined to be flawed. Prior to the RF06 inspections, NMP2 was classified as a Category B plant based on the BWRVIP-01 criteria. Per the BWRVIP-01 criteria, if cracking in any of the welds is greater than 10 percent of the weld length inspected, then a Category C inspection is required. Category C inspection requires an expanded scope, requiring 100 percent inspection of accessible areas of all horizontal shroud welds. Based on this requirement, all eight shroud horizontal welds were inspected. Additional inspections conducted indicated significant cracking of H5 and H7 welds and minor or no cracking of welds H1, H2, H3, H6 and H8. The Appendix to the attached report, GENE-B13-01920-63, Rev. 2, provides a summary of the horizontal weld inspections. Inspection of accessible areas of vertical welds V12, V13, V14, V15, V16 and V17 has indicated no evidence of cracking. For these welds, the weld lengths examined were: 90.7, 90.7, 94.9, 94.9, 22.3 and 19.8 percent, respectively. Vertical welds V4/V5 and V24/V25, which are located at the top guide and the core plate area, were not accessible and therefore, were not inspected.

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Horizontal weld examination was performed using the SMART 2000/OD tracker system. The TRI-MODAL search unit consisted of a 45° shear wave, 60° refracted longitudinal (RL) wave and a 80° longitudinal OD creeping wave transducer. Vertical welds were examined using the Tecnom TEIDE tool/SUMIAD III, which scans the welds from the ID surface. The TRI-MODAL search unit consisted of a 45° shear wave, 60° refracted longitudinal (RL) wave and OD creeping wave transducers. Supplemental examinations were performed on horizontal welds, where the OD tracker would not fit, to obtain additional coverage using the TEIDE tool. The shroud examination was performed consistent with the requirements of BWRVIP-03. Supplemental EVT-1 examinations were performed at separate locations on H4 and H5 welds which confirmed UT indications.

The root cause of the shroud cracking at NMP2 has been determined to be Intergranular Stress Corrosion Cracking (IGSCC), typical of that previously identified and evaluated in BWRVIP-01 and BWRVIP-14. Similar cracking has been identified on several BWR core shrouds.

The Attachment to this letter submits report GENE-B13-01920-63, Rev. 2, in accordance with BWRVIP-01, to address continued operation of NMP2 for one operating cycle. This report was developed considering the scope of shroud examinations performed, the indications identified by these examinations, and the evaluation of these indications to determine structural integrity of the core shroud structure. GENE-B13-01920-63, Rev. 2, was developed using the crack evaluation guidelines delineated in BWRVIP-01. A third party review performed using finite element analysis confirmed the results provided in GENE-B13-01920-63, Rev. 2, to be conservative. This analysis uses a bounding crack growth rate of  $5 \times 10^{-5}$  inches/hour. NMPC is currently evaluating the NRC SER associated with BWRVIP-14 and believes a crack growth rate of  $2.2 \times 10^{-5}$  inches/hour may be justified. If application of this crack growth rate is appropriate, NMPC will submit a revised analysis which could justify operations for two cycles.

NMPC will provide a core shroud reinspection plan three months prior to performing the next inspection (RFO7). The results from that inspection will be provided thirty days after completion of these inspections.

Very truly yours,



Carl D. Terry  
Vice President

Nuclear Safety Assessment & Support

CDT/JMT/kap  
Attachment

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




UNITED STATES NUCLEAR REGULATORY COMMISSION

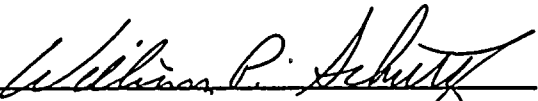
In the Matter of )  
 )  
NIAGARA MOHAWK POWER CORPORATION ) Docket No. 50-410  
 )  
Nine Mile Point Nuclear Station Unit 2 )

C. D. Terry, being duly sworn, states that he is Vice President Nuclear Safety Assessment & Support 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 document attached hereto; and that the document is true and correct to the best of his knowledge, information, and belief.

NIAGARA MOHAWK POWER CORPORATION

By   
C. D. Terry  
Vice President  
Nuclear Safety Assessment & Support

Subscribed and sworn to before me, a Notary Public in and for the State of New York and the County of *Orange*, this *9<sup>th</sup>* day of July, 1998.

  
Notary Public in and for  
*Orange* County, New York

My Commission Expires:  
*3/19/01* # *01584747996*

