

June 10, 1998

LICENSEE: Niagara Mohawk Power Corporation

FACILITY: Nine Mile Point Nuclear Station, Unit No. 2

SUBJECT: SUMMARIES OF RESULTS OF SHROUD WELD INSPECTIONS AND ANALYTICAL APPROACH

On June 9 and 10, 1998, I received the enclosed facsimile and electronic mail transmissions from Mr. Steven Leonard of Niagara Mohawk Power Corporation providing summaries of the latest inspection results regarding the horizontal and vertical welds of the core shroud at Nine Mile Point Nuclear Station, Unit No. 2 and plans for analyses. Apart from these summaries, and in accordance with the Boiling Water Reactor Vessel and Internals Project's (BWRVIP's) "BWR Core Shroud Inspection and Flaw Evaluation Guidelines" (BWRVIP-01), Revision 2, the licensee will submit to the NRC within 30 days, a report on the final inspection results of all inspected welds (including vertical welds V12 through V17 which were not required by the BWRVIP inspection guidelines) and the analytical analyses of horizontal welds H4 and H5. Enclosure 1 discusses the licensee's analytical approach to determine the structural integrity of welds H4 and H5 based upon linear elastic fracture mechanics (LEFM) analyses.

Darl S. Hood, Senior Project Manager  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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Docket No. 50-410

Enclosures: 1. Fax dated June 9, 1998 (2 pages)  
2. Electronic mail dated June 10, 1998 (2 pages)

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

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*Darl S. Hood*

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FAX COVER LETTER

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NAME: STEVE LEONARD

DEPARTMENT: LICENSING/ENVIRONMENTAL

TELEPHONE NUMBER:

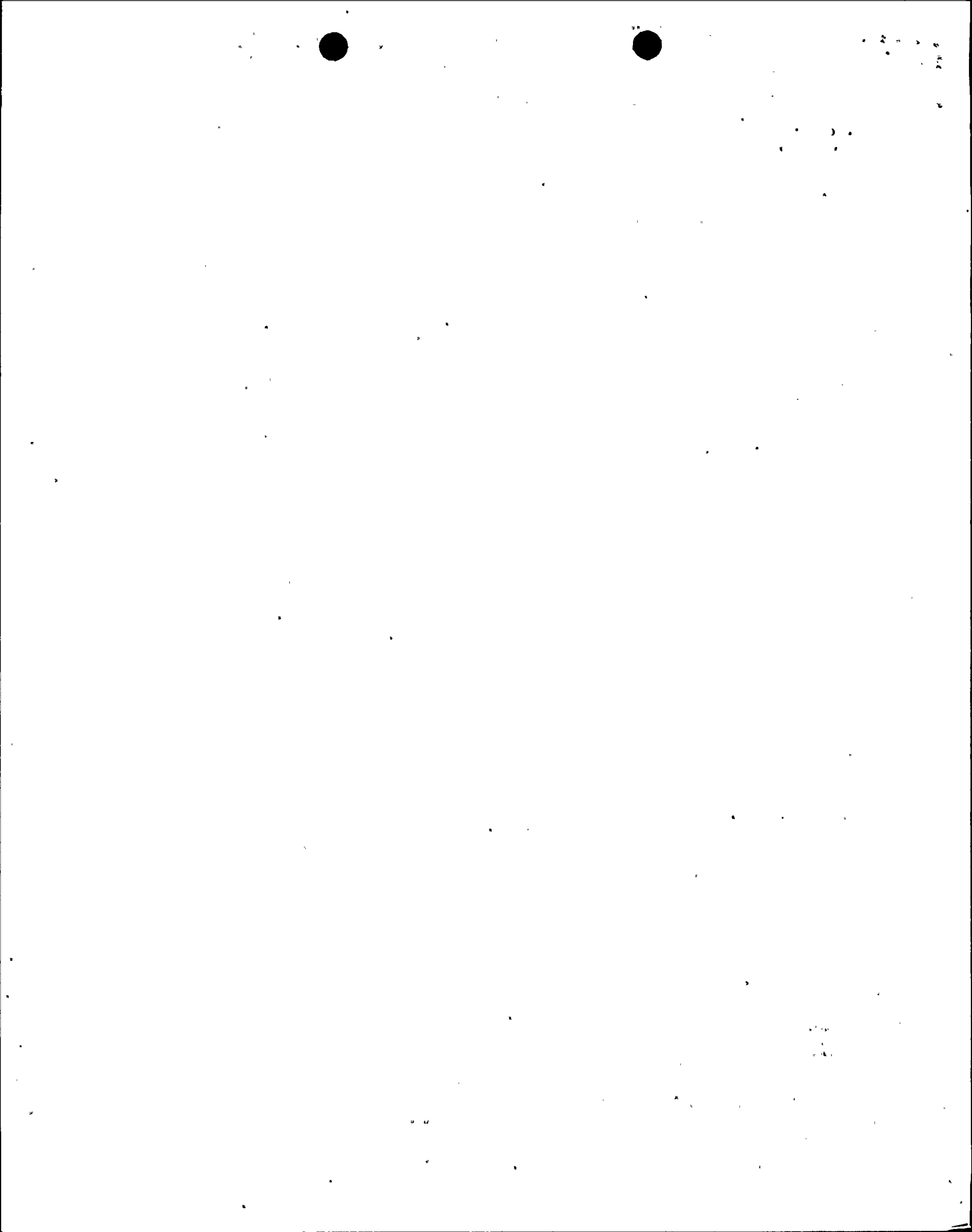
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you received this - STEVE



*DARC,*

NMPC has almost completed the inspection of the Unit 2 core shroud welds. Below is a table providing a summary of the inspection findings to date and a description of NMPC's analytical approach which will be used to demonstrate the structural integrity of the welds with significant flaws.

Consistent with the BWRVIP guidelines, NMPC will submit the final inspection results and the results of the H4 and H5 weld analyses within 30 days of the end of the current refueling outage, for NRC approval.

### Inspection Results

Inspection of vertical welds is underway.

Horizontal weld inspection results as of 6/7/98.

Weld No.	% of Weld Length Examined	% of Examined Length Flawed	Max. Depth of Flaw (inches)
H1	56.03	4.42	0.5
H2	56.03	3.01	0.4
H3	70.58	2.13	0.33
H4	77.14	71.45	0.65
H5	79.94	52.71	0.65
H6	50.67	0	0
H7	79.31	40.85	0.6
H8	79.89	8.10	0.35

### H4 and H5 Analytical Approach

The analysis of the structural integrity of the horizontal weld H4 and H5 welds is performed consistent with the requirements identified in the BWRVIP-01 flaw evaluation and analysis guidelines. The cracking on these welds exists over a significant percentage of the circumference such that the simplified Lmin uncracked ligament analysis was not possible. Since these welds require LEFM analysis, the limiting condition is created by the assumption that regions which could not be inspected are through wall cracked. The analyses which are required for H4 and H5 qualify as detailed analyses wherein the methods which are typically discussed and applied to establish an Lmin are not sufficient. The detailed analyses performed are consistent with the guidance in BWRVIP-01 to the extent that the methods are discussed.

The LEFM analyses of the part through wall 360 degree crack, combined with the through-wall assumption in regions which could not be inspected, require the stress intensity factor calculated with the DLL computer program to be increased by a factor reflecting the presence of 360 degree cracking. In addition, finite element modeling of the 360 degree cracking has been performed which has validated the scaling factor applied to the DLL solution. While not explicitly addressed in BWRVIP-01, these analysis methods are consistent with other BWR core shroud analyses of 360 degree part through wall cracking, previously submitted and reviewed by the NRC.

*STEVE LEONARD 6-9-98.*

