



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

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING NIAGARA MOHAWK POWER CORPORATION'S RESPONSES TO

NRC GENERIC LETTER 88-01 SAFETY EVALUATIONS

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-220 AND 50-410

1.0 INTRODUCTION

By letters dated September 4, 1990, November 2, 1990, March 7, 1991 (for Nine Mile Point 1) and November 20, 1990 (for Nine Mile Point 2), Niagara Mohawk Power Corporation (the licensee) submitted its responses to the NRC's Safety Evaluations (SEs) of the licensee's Generic Letter (GL) 88-01 program. In NRC SEs dated May 15, 1990, and August 17, 1990, for Nine Mile Point (NMP) 1 and 2, respectively, the staff found the following licensee's GL 88-01 positions unacceptable:

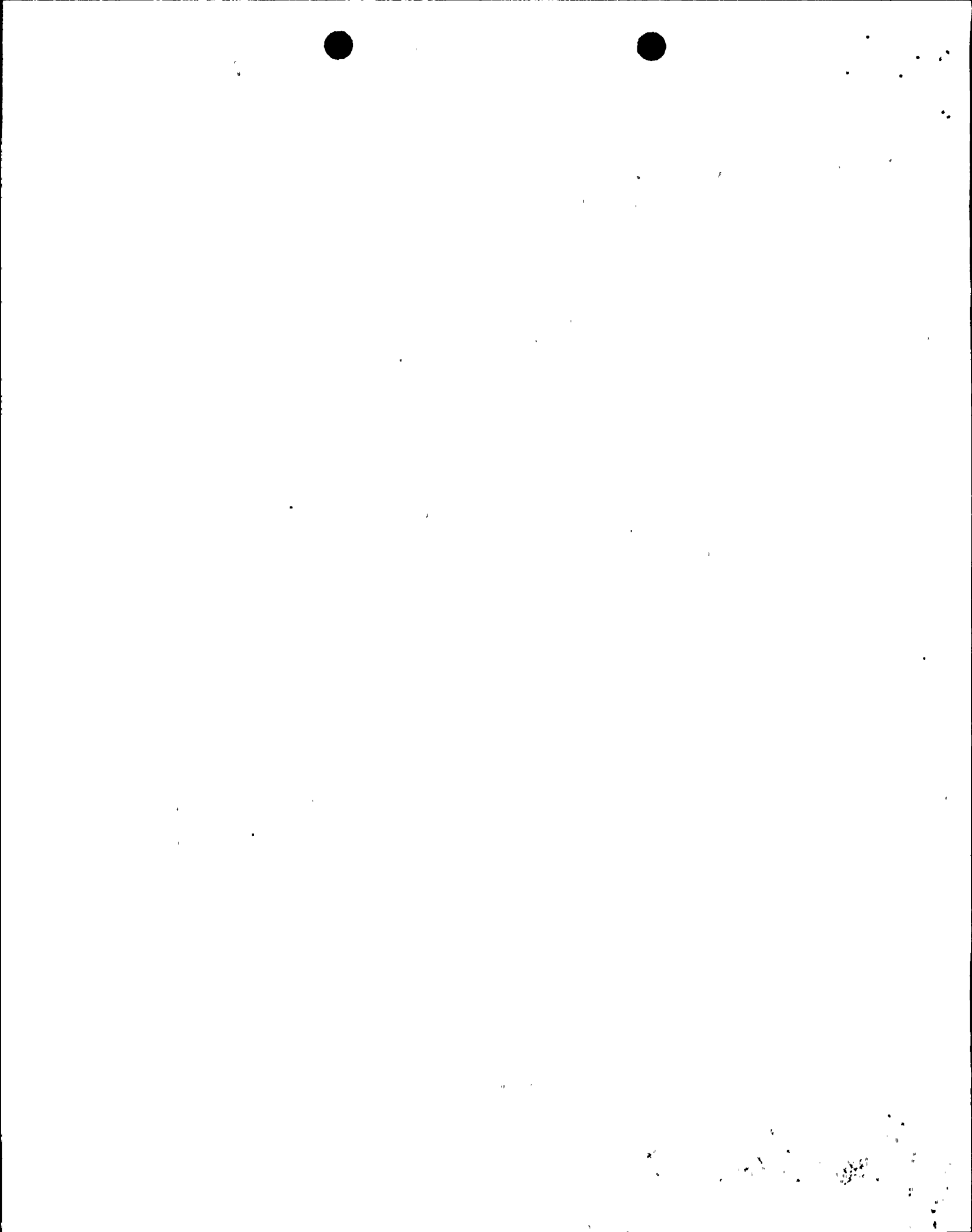
NMP 1

1. The licensee's position of classifying welds between non-conforming materials and high carbon stainless steel castings as IGSCC Category A.
2. The differences between the licensee's original submittal dated July 28, 1988, and the response dated September 6, 1989, with regard to the number of welds in each of the IGSCC categories and the number of inaccessible welds; e.g., listing several welds as inaccessible for inspection and/or scheduled for inspection and classified as IGSCC D welds.
3. The licensee's inspection schedules for IGSCC Category D and Category G welds and the omission of inspection plans for welds in the Reactor Water Cleanup (WCS) piping outboard of the isolation valves is not acceptable as it does not comply with requirements of GL 88-01. As a minimum, the licensee should prepare an inspection plan for the WCS system piping outboard of the isolation valves on a sampling basis with justification for the selected sample size.

NMP 2

1. The licensee's position concerning GL 88-01 leakage detection requirements: (1) plant shutdown within 24 hour period or less when the rate of increase of unidentified leakage is 2 gpm, (2) frequency of leakage monitoring, (3) operability of leakage measurement instruments, and (4) the licensee's position concerning conformance with Position C of Regulatory Guide 1.45.

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2. The licensee's classification of welds in the Reactor Recirculation System, Residual Heat Removal System, and Reactor Pressure Vessel which have been classified as IGSCC Category A even though non-resistant materials (Type 316 stainless steel and Inconel 182) were used.
3. The licensee's inspection plans for welds that have been incorrectly classified as IGSCC Category A based on non-resistant materials and the omission of inspection plans for welds in the WCS piping outboard of the isolation valves.
4. The staff takes exception to the Technical Evaluation Report (TER) recommendation to accept the licensee's position concerning inspection of appurtenances to components; e.g., vents and drains. The licensee indicated that such welds do not require Inservice Inspection under ASME XI, except for a possible visual inspection of the component internal surfaces or system pressure test and are not considered within scope of GL 88-01. However, the licensee did not indicate that the piping in question is four inches or larger in nominal diameter and contains reactor coolant at a temperature above 200 degrees F during power operation regardless of Code classification. It also applies to reactor vessel attachments and appurtenances such as jet pump instrumentation penetration assemblies and head spray and vent components. The licensee is requested to revise the inspection plans to include the referenced appurtenances or verify that the piping in question is less than 4 inches in nominal diameter.
5. The staff takes exception to the TER recommendation to accept the licensee's position concerning the classification of the solution treated, Type 316L welds in the WCS. These welds can be classified as Category A only after the material has satisfactorily passed the test for resistance to sensitization in accordance with ASTM A262-A or -EI or equivalent standard. The licensee is requested to re-evaluate the IGSCC weld classification of the 316L grade stainless steel portions of WCS, where the material was not subjected to a sensitization test.

2.0 DISCUSSION:

In response to the staff's concerns, as discussed, above the licensee addressed these concerns as follows:

NMP 1

1. IGSCC Weld Classification of Welds Between Non-conforming Materials and High Carbon SS Castings.

Licensee's Response: The licensee replaced the entire Recirculation System piping (including safe-ends) with Type 316NG austenitic stainless steel which is considered IGSCC resistant material per GL 88-01. In addition, the weld metal between pumps or valves and the Recirculation System piping is Type 308L that meets ASME Section



III ferrite requirements and also GL 88-01 considers it to be resistant to sensitization and IGSCC in BWR piping systems. Furthermore, the licensee has an augmented ISI program to inspect six of the thirty welds between pumps or valves and the Recirculation System piping each refueling outage. This would result in the inspection of all thirty welds in the a ten-year interval and exceeds the staff position on inspection schedules for IGSCC Category A welds in GL 88-01.

2. Inspection Schedule Differences Between Licensee's GL 88-01 Submittals For NMP 1.

Licensee's Response: The licensee provided up-to-date information regarding the welds that are within the scope of GL 88-01 and superseded the information in its previous submittals. In addition, the licensee provided a summary of IGSCC Classifications of the welds at NMP 1.

3. Inspection Plans For WCS Welds Outboard Of The Isolation Valves.

Licensee's Response: By letter dated November 2, 1990, the licensee committed to inspect a minimum of 10% of the WCS System welds outboard of the containment isolation valves each refueling outage.

The staff has found that the licensee's responses for NMP 1 (dated September 4, 1990, November 2, 1990, and March 7, 1991) to the NRC's SE dated May 15, 1990, are acceptable.

NMP 2

1. Licensee's Position Concerning GL 88-01 Leakage Detection.

Licensee's Response: The licensee will adhere to the leakage detection requirements recommended in the staff's SE dated August 17, 1990, which will be the subject of a future technical specification amendment to be submitted by June 30, 1991.

2. Licensee's IGSCC Weld Classification.

Licensee's Response: The licensee indicated that the Reactor Recirculation System (RCS) and Residual Heat Removal System (RHS) have IGSCC resistant material; e.g., 316K stainless steel and 316K welds. In addition, the licensee re-evaluated the IGSCC classification of welds in the Reactor Pressure Vessel (RPV) and reclassified them from IGSCC Category A to IGSCC Category D. These reclassifications are reflected in the licensee's revised tables for History of Welds and Inspection Schedules.



3. Licensee's Inspection Plans for RPV and WCS Welds Outboard of the Containment Isolation Valves.

Licensee's Response: The inspection plans for the RPV have been revised based on the reclassification of these welds noted in the above response. In addition, the WCS piping outboard of the containment isolation valves valves is carbon steel and is immune to IGSCC.

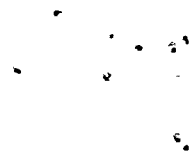
4. Inspection of Appurtenances to Components; e.g., Vents And Drains.

Licensee's Response: The licensee excluded welds for reactor vessel attachments and appurtenances because they are socket type welds less than four inches in diameter.

5. IGSCC Classification of Solution Treated Type 316 Welds.

Licensee's Response: The stainless portions of the WCS piping which fall within the scope of GL 88-01 are fabricated from Type 316L low carbon wrought austenitic stainless steel and installed using low carbon grade filler metal with a ferrite content between 8% and 20%. This material is considered to be resistant to sensitization and IGSCC in accordance with staff positions in NUREG-0313, Revision 2, and GL 88-01. Although these materials were not subject to a sensitization test as required by GL 88-01, they were water quenched from the solution annealing temperature. Water quenching provides a more positive mechanism than testing for ensuring resistance to sensitization and water quench material has not had any problem meeting ASTM A262-A when tested. The licensee does not have any spare samples of the WCS material to perform a sensitization test in accordance with ASTM A262-A, which is a destructive test.

The staff has found the licensee's responses for NMP 2 dated November 20, 1990, regarding the NRC's SE dated August 17, 1990, acceptable with the exception of the licensee's position concerning sensitization testing in accordance with ASTM A262-A or -EI or equivalent standard as required by GL 88-01. The staff recognizes that the licensee cannot perform sensitization test in accordance with ASTM A262-A because it is a destructive test and the licensee does not have any spare samples of the WCS material to perform the subject test. However, the licensee should perform an in-situ metallography on the subject welds to demonstrate its resistance to sensitization because, according to GL 88-01, these materials must be tested for resistance to sensitization to be classified as IGSCC Category A. A minimum of one sample weld should be tested for each heat lot and each pipe size, and the test area should include the heat affected zone. The in-situ sensitization testing procedures should be developed and qualified by demonstrating the test results to be equivalent to that tested with ASTM A262-A. If the in-situ metallography cannot be performed, the



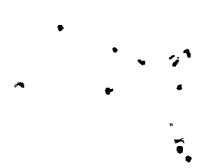
licensee should reclassify the subject welds so that they will be inspected more frequently since the WCS has the most aggressive environment with regard to IGSCC.

3.0 CONCLUSION

Based on the information provided, the NRC staff finds the licensee's responses to NRC's SEs dated May 15, 1990, and August 17, 1990, acceptable with the exception of the licensee's position concerning sensitization testing in accordance with ASTM A262-A or -EI or equivalent standard as required by GL 88-01. The licensee should take action as discussed above either by performing an in-situ metallography on the subject welds or reclassify them so that they will be inspected more frequently. The staff also concludes that if the licensee follows the above recommendations that the structural integrity of the plant's piping system will be maintained.

Principal Contributors:
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William Koo

Date: ' JUN 24 1991



Mr. B. Ralph Sylvia

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June 24, 1991

This requirement for commitment affects one respondent; therefore, is not subject to Office of Management and Budget review under P. L. 96-511.

Sincerely,

ORIGINAL SIGNED BY:

Donald S. Brinkman, Senior Project Manager
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