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EISENHUT,D.G. Division of Licensing

SUBJECT: Forwards util position re implementation of NUREG-0313, Revision 1 concerning RCPB piping, in response to NRC Generic Ltr 81-03. Info. re evaluation of proposed matls by NSSS will be provided by 820225.

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NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

October 27, 1981

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Nine Mile Point Unit 2
Docket No. 50-410

Dear Mr. Eisenhut:

Your generic letter 81-03, dated February 26, 1981 requested information regarding the implementation of NUREG 0313, Revision 1. The attachment to this letter provides Niagara Mohawk's position with respect to the coolant pressure boundary piping at Nine Mile Point Unit 2.

The information contained in the attachment does not include the evaluation of proposed materials by our nuclear steam system supplier. That information will be transmitted to you by February 25, 1982.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

G. K. Rhode
Vice President
System Project Management

PM:ja

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NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 2

DOCKET NO. 50-410

Implementation of NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping"

Revision 1 to NUREG-0313 specifies material requirements for all ASME III Class 1, 2 and 3 stainless steel piping and fittings to minimize the occurrence of intergranular stress corrosion cracking (IGSCC). In those applications where material used is not in compliance with that specified in the NUREG, increased leak detection measures and an augmented inservice inspection program must be implemented.

A review of the material to be used in all quality assurance (QA) Category I stainless steel piping systems, except those supplied by the nuclear steam system supplier, was conducted. The extent of the review included, but was not limited to, piping, fittings, valves and penetrations. This study was limited to those ASME III Class 1, 2 and 3 piping and components which normally operate at a temperature in excess of 200°F. Although the NUREG does not specify temperature limitations, this restriction is supported by test data and the analysis results of actual in service failures. This data and analysis have demonstrated that, provided that the specified BWR water chemistry, including oxygen, is adhered to, there is an insignificant risk of IGSCC in systems which normally operate at temperature below 200°F.

The majority of the piping and components reviewed were found to be in full compliance with the material requirements in the NUREG. The piping and components which were discovered not to be in compliance can be categorized into four groupings: instrument lines, large bore piping, miscellaneous small bore piping, and penetrations.

I. Instrument Lines

There are 54 instrument lines which attach to the reactor coolant pressure boundary and associated auxiliary systems with an operating temperature over 200°F. Each of these lines is presently specified to be fabricated from SA376 TP304 material, which does not meet the material requirements of the NUREG. All 54 instrument lines are to be respecified to be fabricated from Class 1516 piping from the tapoff point to the containment penetration. Class 1516 piping is fabricated from SA312 TP316L material.

In addition to the piping, all of these instrument lines contain a restricting orifice between the tapoff point and the containment penetration. Twenty-five of these lines also contain a constant head chamber between the tapoff point and the restricting orifice. The restricting orifices presently do not meet the NUREG requirements, whereas the constant head chambers do. A respecification for the restricting orifices to Type 316L grade material will be performed.

The respecification of the piping and restricting orifices will bring the instrument lines into compliance with the NUREG.

II. Large Bore Pipe

Sixteen large bore lines (ranging from 3 inches to 18 inches) have been identified in the residual heat removal and reactor core isolation cooling systems which presently do not comply with the NUREG material requirements and have a normal operating temperature above 200°F. However, these lines will be subject to a high temperature only during operating conditions. The length of time of operation, for these lines, is on the order of seconds. These lines include the residual heat removal system safety and relief valve discharge lines, the residual heat removal system pump minimum flow bypass lines, and the reactor core isolation cooling system turbine exhaust line. All of these lines have been fabricated from Class 153 and 302 piping, both specified as SA312 TP304 material.

An analysis of the length of time in which each of these lines are exposed to temperatures greater than 200°F has been performed. The results have indicated that the total time is insignificant with respect to the service conditions that cause IGSCC. Therefore, a change to a L-grade material is not warranted since these lines will not be susceptible to IGSCC.

III. Small Bore Pipe

There are nine miscellaneous small bore lines which have specified normal operating temperatures above 200°F and do not comply with the NUREG material requirements. Eight of these lines serve as vacuum breakers between the large bore lines discussed above and the suppression chamber. These eight lines will also only be exposed to temperatures greater than 200°F for an insignificant period of time. Therefore, Niagara Mohawk does not believe that a material change is warranted.

The remaining nonconforming small bore line is a reactor recirculation system sample line. This line is presently specified as Class 2512 piping (TP 316 grade material). Since this line will be above 200°F whenever the reactor itself is above 200°F, this line will be respecified as TP 316 grade material. In addition to the piping, this sample line contains five valves. Presently, three of these valves have been fabricated using TP 316 grade material. However, all five valves will be respecified to be manufactured from TP 316L grade material, if a qualified vendor can be found. If a qualified vendor cannot be found, then an inservice inspection program will be implemented in accordance with the NUREG requirements.

The control rod drive (CRD) insert/withdrawal lines, as originally specified, did not meet the material requirements of the NUREG. However, since then these lines have been changed to TP 304L grade material, thus bringing them into compliance.

During the course of the study, it was noted that there are some ASME III Class 2 stainless steel lines in the hydrogen recombiner system which have a normal operating temperature of 205°F and do not comply with the NUREG material requirements. These lines will contain only an air/hydrogen mixture and will therefore never be exposed to a BWR coolant environment. The lines are not susceptible to IGSCC and were therefore eliminated from further consideration.

IV. Containment Penetrations

All containment penetrations whose process lines operate above 200°F have been fabricated from SA 182 TP 304L material in full compliance with the NUREG. These also include all of the instrument and CRD penetration assemblies. The reactor isolation cooling system turbine exhaust line penetration and the three residual heat removal system relief valve discharge line penetrations were fabricated from TP 304L grade material in compliance with the NUREG.

The two penetrations associated with the residual heat removal pump minimum flow bypass lines and two penetrations located in the RHR system safety valve discharge lines have been fabricated from a TP304 grade material. For the same time-temperature considerations discussed previously in Section II. Large Bore Pipe, Niagara Mohawk believes these penetrations are acceptable as fabricated.

In summary, a review of the Unit 2 design has been performed to address the requirements stated in Revision 1 to NUREG 0313. This review has found the project to be in full compliance with the specified material requirements of the NUREG, except as noted above, for those systems operating above 200°F. The exception due to temperature is justified by test data and analysis. Niagara Mohawk will respecify to bring into conformance the fabricating material for the piping and restricting orifices for 54 instrument lines, the reactor recirculation system sample line piping and valves and the control rod drive insert/withdrawal lines. The remaining piping and penetrations do not warrant a change due to time-temperature considerations.