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ACCESSION NBR: 8701150443 DOC. DATE: 87/01/14 NOTARIZED: YES DOCKET #
 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moho 05000410
 AUTH. NAME AUTHOR AFFILIATION
 MANGAN, C. V. Niagara Mohawk Power Corp.
 RECIP. NAME RECIPIENT AFFILIATION
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SUBJECT: Advises of status & future action re ^{SEE REPTS} main steam line isolation ball valves. Confirmatory testing & evaluation program continuing to assure valves meet design function over lifetime.

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January 14, 1987
(NMP2L 0971)

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

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

Gentlemen:

The purpose of this letter is to inform the Nuclear Regulatory Commission of the status and future action relating to the main steam line isolation ball valves for Nine Mile Point Unit 2. We have, on a number of occasions including December 30, 1986 and January 6, 1987, talked to you about these valves and certain problems associated with them which have been identified by Niagara Mohawk Power Corporation. These problems result from delamination of the tungsten carbide coating, which is believed to be caused by local high contact stress between the seat and ball surface. As discussed below, Niagara Mohawk has concluded that these valves are capable of performing their intended function and are acceptable from a safety standpoint. We are continuing our confirmatory (prototype) testing and evaluation program to assure that these valves will meet their design function over their lifetime. Continued operation with the ball valves is consistent with current industry and regulatory practice regarding the generic issue of main steam line isolation valve leakage.

In reaching the decision to continue to use these valves, Niagara Mohawk has examined the current pattern of leak test results experienced at Nine Mile Point Unit 2 compared to the historical experience with the wye pattern globe valves which are used by other BWRs as main steam isolation valves. In general, while both types of valves can be brought to a condition which will pass Technical Specification leak test requirements, there is some probability that the leak tightness may degrade over time and the valve may not pass a subsequent leak rate test unless maintenance and refurbishment is performed. As discussed below, despite such possible increases in leakage over time, the safety function of the valves is not affected, and the valves meet their licensing bases.

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Over the years, there has been considerable effort throughout the industry to resolve generic concerns related to BWR main steam isolation valves. While there has been a general improvement in the performance of these valves, not all the problems have yet been solved. Recently, NUREG 1169 which provides the latest regulatory evaluation regarding this issue was published. Based upon this evaluation, it can be concluded that some degradation in leak tightness beyond the value associated with Surveillance testing contained in the Technical Specification would not result in a health and safety impact when the mitigating effect of other plant features are realistically considered and modeled.

Niagara Mohawk has reviewed the Nine Mile Point Unit 2 design against NUREG 1169. As discussed in the attachment to this letter, we have concluded that Unit 2 compares very favorably with respect to design features which have a significant effect in reducing the radiological impact of leakage in the main steam line isolation valves. Furthermore, because the valves utilized for Unit 2 are of different design, Niagara Mohawk has taken additional measures to further assure public health and safety. The Company has assessed the significance of the potential for degradation of the valve leak tightness and has also performed additional testing of the valves to determine the level of degradation which reasonably could be expected over a comparatively long period of time, i.e., for a number of cycles greater than that expected to be experienced by the valves during the first refueling cycle.

This testing indicates that the maximum observed leakage per valve of 17 standard cubic feet per hour occurred only after 54 full fast closures and 54 partial closure valve cycles of operation. It is expected that for the first refueling cycle, the valves will be subjected to 33 full cycles and 17 partial cycles. A description of the testing and results is attached to this letter. Using a comparison of Unit 2 design features to the factors discussed in NUREG 1169, we have evaluated the level of valve leakage which might have a significant radiological impact both in the control room and to members of the public following a radiological accident. We have conservatively determined that a total leakage up to 150 standard cubic feet per hour through all four main steam lines would not result in doses exceeding the limit. This compares to a leakage of 53 standard cubic feet per hour (which is described on page 16 of the attached report) based upon the test data. The evaluation results indicate that the controlling limit is the beta radiation exposure of the plant operators. With appropriate beta radiation protection, leakage up to 500 standard cubic feet per hour would not result in exceeding dose limits. Considerably higher leakages can be tolerated before exceeding the dose limit for the public. A description of this evaluation is attached to this letter.

As you are aware, Niagara Mohawk is pursuing an extensive prototype testing program for these valves. This program is described in our final report [55(e)] to the Nuclear Regulatory Commission on Main Steam Isolation Valve leakage dated October 20, 1986. We expect that the information gained from this testing will confirm the design basis for these valves and will be helpful in identifying measures which may be implemented to further improve the performance of these valves.

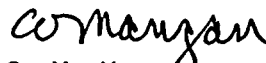


In conclusion, the decision to utilize the ball valve for Nine Mile Point Unit 2 was as a result of the recognition of the problems relating to main steam isolation valves which have been a generic concern for a number of years. The ball type valve has inherent design features which we believe will ultimately enhance leak tightness. At the minimum, the ball type valve has characteristics comparable to those of the wye pattern globe valves. We are confident that these valves will perform their isolation function in case of a main steam line break or other event requiring primary system isolation. We have demonstrated that these valves can be brought into conformance with the Technical Specification leak tightness requirements. We have also analytically and experimentally shown that the maximum expected leakage from these valves is bounded and is generally comparable to or below the industry experience for the wye pattern globe valves. We have also demonstrated that any reasonably expected level of leak tight degradation will not have a significant radiological impact upon the public health and safety. Finally, we expect that additional knowledge about these valves gained through testing and operational experience will enable us to better understand and, perhaps, improve their operational performance.

For these reasons, Niagara Mohawk has, at this time, determined to continue the startup testing and operation of Unit 2 in accordance with the Operating License and Technical Specifications. We will, as we have previously committed, notify the Commission promptly should any of our testing indicate a concern regarding the valves' ability to function. Additional information regarding the final actuator design and a full summary report of the testing to date will be provided by January 16, 1986. In accordance with our Operating License, we will notify you after the valves are declared operable.

If you require any additional information or wish to discuss this matter any further, please let me know.

Very truly yours,



C. V. Mangan
Senior Vice President

NLR/pns
2423G
Attachments

xc: Regional Administrator, Region I
Ms. E. G. Adensam, Project Director
Mr. W. A. Cook, Resident Inspector
Project File (2)



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. V. Mangan, being duly sworn, states that he is Senior 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.

C. V. Mangan

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 14th day of January, 1987.

Beth A. Menikheim
Notary Public in and for
Onondaga County, New York

My Commission expires:

BETH A. MENIKHEIM
Notary Public in the State of New York
Qualified in Onondaga County No. 4304074
My Commission Expires August 31, 1988

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