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RECIP. NAME RECIPIENT AFFILIATION
BERNERO, R. Division of Boiling Water Reactor (BWR) Licensing

SUBJECT: Forwards application for schedular exemption re further analysis of & possible mod to MSIVs & performance of low power physics experiments. All requirements under 10CFR50.12 for issuance of exemption fulfilled.

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NIAGARA MOHAWK

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

August 22, 1986
(NMP2L 0844)

Mr. Robert Bernero, Director
Division of BWR Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Bernero:

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

As a result of discussions with the staff, Niagara Mohawk Power Corporation has decided to seek a schedular exemption to allow further effort on the resolution of the problems recently encountered with operation of the main steam isolation valves. The enclosed application demonstrates that all requirements under 10CFR50.12 for the issuance of the requested exemption have been fulfilled. The schedular exemption would allow operation of the unit through fuel loading and the completion of the low power physics tests.

The requested exemption presents no undue risk to the health and safety of the public. The operation requested is within the Technical Specifications for the unit; additionally, there will be virtually no fission product inventory built up in the core as a result of the requested operation.

You can be assured that Niagara Mohawk is moving forward in a timely manner to resolve this issue. We intend to discuss the Company's approach to resolution periodically with you and your staff. In the meantime, should you have any questions concerning our program or our schedular exemption, please let me know.

Very truly yours,

C. V. Mangan
Senior Vice President

RAC:rla
Enclosure
2006G

xc: W. A. Cook NRC Resident Inspector.
Project File (2)

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UNITED STATES OF AMERICA
NULCEAR REGULATORY COMMISSION

In the Matter of Niagara Mohawk Power Corporation (Nine Mile Point Unit 2)	)))	Docket No. 50-410

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 22nd day of August, 1986.

Christine Austin
Notary Public in and for
Onondaga County, New York

My Commission expires:

CHRISTINE AUSTIN
Notary Public in the State of New York
Qualified in Onondaga Co. No. 4787687
My Commission Expires March 30, 1987

(1998G)

APPLICATION FOR SCHEDULAR EXEMPTION

RELATED TO FURTHER ANALYSIS OF AND POSSIBLE

MODIFICATION TO MAIN STEAM ISOLATION VALVES

I. Introduction and Summary

Nine Mile Point Unit 2 ("NMP Unit 2") is a nuclear power plant employing a General Electric Company single cycle, forced circulating boiling water reactor ("BWR") with a plant rated core thermal power level of 3323 MWt corresponding to a net electrical output of 1080 MWe. Niagara Mohawk tendered an application for an operating license for NMP Unit 2 on January 31, 1983. The Final Safety Analysis Report ("FSAR") was docketed on April 12, 1983 subsequent to the completion of the Staff acceptance review.

The main steam isolation valve design and operation are described in Section 5.4.5 of the Final Safety Analysis Report. The Main Steam Isolation Valves are 24-in, reduced port (21 in.) ball-type valves. Two isolation valves are located in each of the four main steam lines; one valve inside containment and one valve just outside containment. They are provided to isolate the main steam lines in the event of a design basis accident in order to limit any radioactive release to the environment, to limit any inventory loss from the reactor vessel, and to terminate the release of mass and energy in the event of a main steam line rupture outside containment.

Recent testing of the main steam isolation valves has disclosed two problems:

[illegible]

[illegible]

[illegible]

[illegible]

1) The mechanical actuator which closes the valve did not always function properly. Two types of problems were encountered: a) the actuator system operated slowly, so that the valve did not close within the time (5 seconds) called for in the Technical Specifications; Sections 3/4.4.7 and 3.4.6.3; and b) on occasion, the actuator did not operate sufficiently to permit the valve to move from its open position.

2) A crack was discovered in a latching roller, a component of the valve actuator. This is similar to a problem that was previously reported to the Nuclear Regulatory Commission under 10CFR50.55(e) (in NMPC letter unmber 7600, December 9, 1983, C. V. Mangan to R. W. Starostecki).

In light of the above, the main steam isolation valves are not operable in the context of the Technical Specifications, and the requirements of 10CFR50, Appendix A, General Design Criteria 54 and 55 are not met.

Niagara Mohawk therefore requests a schedular exemption pursuant to the Commission's regulations under 10CFR 50.12(a) to allow completion of the analysis required to provide a resolution of the problem, the procurement of equipment found necessary to resolve the problems, installation of any required modification, and the testing to prove the acceptability of the solutions to the problems.

Specifically, the requested exemption is to permit fuel loading and performance of the low power physics experiments.

The following discussion sections demonstrate that the grant of an exemption would be in accordance with the requirements of 10CFR50.12(a). In particular, as discussed in detail below, grant of the exemption would not present an undue risk to public health and safety.

The position of the valves, i.e., whether they are open or closed, is immaterial during operation in modes 4 and 5. Operation in mode 2, during low power physics tests is permitted by the Technical Specifications provided that one isolation valve in each steam line is deactivated in the closed position. We will keep at lease one isolation valve in each line closed at all times until preoperational testing is complete, in order to ensure that the plant conforms to the conditions described in our schedular exemption requests which were submitted in our letters dated May 7, 1986 and June 13, 1986.

The requested exemption also meets the other requirements of the regulations. Special circumstances exist which meet the standard under 10CFR50.12(a)(2). The requested exemption is authorized by applicable law, including the Atomic Energy Act, 42 U.S.C. 2011 et seq., and National Environmental Policy Act, 42 U.S.C. 4321 et seq., and it consistent with the common defense and security.

II. The Requested Exemption Does Not Present An Undue Risk To The Public Health And Safety

The requested exemption will permit the loading of fresh fuel into the reactor vessel and the subsequent performance of low power physics tests. Fuel loading takes place with the reactor vessel and the drywell open; there is no containment, so no need for containment isolation. During fuel loading the vessel water level will be above the vessel steam line nozzle, a main steam line plug will be in place in each nozzle, and at least one isolation valve in each steam line will be closed. Such operation is permitted by the Technical Specifications.

The low power physics tests will be performed with the vessel head and the drywell cover in place in operational condition 2. At least one isolation valve in each main steam line will be deactivated in the closed position at all times. Operation under these conditions is permitted by the Technical Specifications.

Operation, as described above, presents no undue risk to the health and safety of the public since isolation of the reactor is assured. Further assurance of safety exists since there will be virtually no fission product inventory in the fuel, even at the conclusion of the low power physics tests.

III. Special Circumstances Exist Which Warrant Issuance Of The Requested Exemption

Special circumstances exist under the categories contained in 10CFR50.12(a)(2) any of which would warrant issuance of the requested

exemption. Undue hardship and costs would otherwise result that are significantly in excess of those incurred by other licensees. Further, the exemption is temporary and Niagara Mohawk has made good faith efforts to comply with licensing requirements. These special circumstances are discussed in accordance with the classification contained in the rule.

A. Undue Hardship

> (iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated . . .

Completion of the additional analyses required to demonstrate operability of the main steam isolation valves as well as any necessary hardware changes, prior to fuel loading of the facility would result in undue hardship and costs. Considering all factors, a delay in operation would result in a monthly delay cost of $60,000,000. The $60 million/month has two components. Fifteen million dollars is estimated as additional overhead construction costs, that is, the overhead involved in maintaining the construction status at the site. The remaining forty-five million dollars constitutes financing costs. This $60 million cost does not include the cost of replacement power.

The fuel loading and low power physics testing for which the schedular exemption is requested are scheduled to take five weeks. At the $2,000,000 per day cost of delayed operation, failure to grant the exemption would add $70,000,000 to the cost of the plant.

Thus, special circumstances exist which warrant granting of the exemption.

B. Applicant's Good Faith Efforts

> (v) The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation ...

As noted above, the exemption is being requested to provide temporary relief until the completion of the low power physics tests. As further discussed, Applicant has made good faith efforts to comply with all regulatory requirements as set forth in applicable Staff guidance.

The main steam isolation valves were procurred and installed with the intent of fully meeting the requirements of the Final Safety Analysis Report and the Technical Specifications with regard to closing time. As noted in Section 5.4.5.3, of the Final Safety Analysis Report the ability of the ball-type valve to close in 3 to 5 seconds was demonstrated by a combination of dynamic tests and analysis. However, recent Site testing experience indicates that the actuator mechanism does not function to consistently close the valve within the required five seconds. A number of options are currently being evaluated to assure that the valve closes within 5 seconds.

The causes of the above problems are attributed to the following:

[illegible]

[illegible]

[illegible]

1. Failure to close within the five seconds is due to a time related increase in the force required to trip the latch mechanism. The specific cause of the time dependent phenomenon is being investigated.

2. The current investigation indicates that failure of the roller appears to have initiated from pre-existing defects which were induced during the manufacturing process. Through-thickness cracking occurred only after a load was applied to the roller in such a manner, dependent on roller orientation and pre-existing defect size, that the critical stress intensity at the given defect was exceeded.

A modification which is being pursued to resolve the MSIV closure problem includes modification of the hydraulic system which is presently used to open the MSIV and allows it to be latched. The hydraulic system would be modified to additionally maintain the MSIV in an open position. By accomplishing this, the present mechanical latching mechanism will not be required.

The hydraulic system solenoid valves will be changed to be continuously energized. In the event of a power failure, the solenoid valve will fail open, thereby causing the MSIVs to close. Additionally, hydraulic failure will cause the spring to close the MSIV thereby maintaining the fail safe feature of the valve.

A sketch is provided, Attachment 1, to depict the modified hydraulic system.

The schedule milestones to accomplish the above prior to "Heat-up" include:

Activity	Target Completion Dates
1. Complete Design/Selection of Replacement Components	September 5, 1986
2. MSIVs Operable	September 12, 1986
3. Completion of Testing	September 27, 1986

In addition to the above modification effort, NMPC will be continuing its investigation of how best to accomplish some of the operational advantages of the original mechanical latch design features of the MSIV operator.

The above investigations will not be implemented without further testing and further discussions with the NRC.

As demonstrated above, the present design presents no undue risk to the public health and safety during the exemption period in the interim. Thus, under this criterion, good cause has been shown for granting the requested exemption.

IV. The Other Requirements for Issuance Of An Exemption Are Met.

The requested exemption is authorized by applicable law, including the Atomic Energy Act and national Environmental Policy Act. With regard to the "common defense and security" standard, the grant of the requested exemption is consistent with the common

defense and security of the United States. The Commission's Statements of Consideration in support of the exemption rule note with approval the explanation of this standard as set forth in Long Island Lighting Company (Shoreham Nuclear Power Station, Unit 1), LBP-84-45, 20NRC 1343, 1400 (1984). Thus, the term "common defense and security" refers principally to the safeguarding of special nuclear material, the absence of foreign control over the applicant, the protection of Restricted Data, and the availability of special nuclear material for defense needs. The granting of the requested exemption will not affect any of these concerns and is, therefore, consistent with the common defense and security.

The proposed exemption has been analyzed and determined not to involve additional construction or operational activities which may significantly affect the environment. It will not result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Impact Statement-Operating License Stage, a significant change in effluents or power levels or a matter not previously reviewed by the NRC which may have a significant adverse environmental impact.

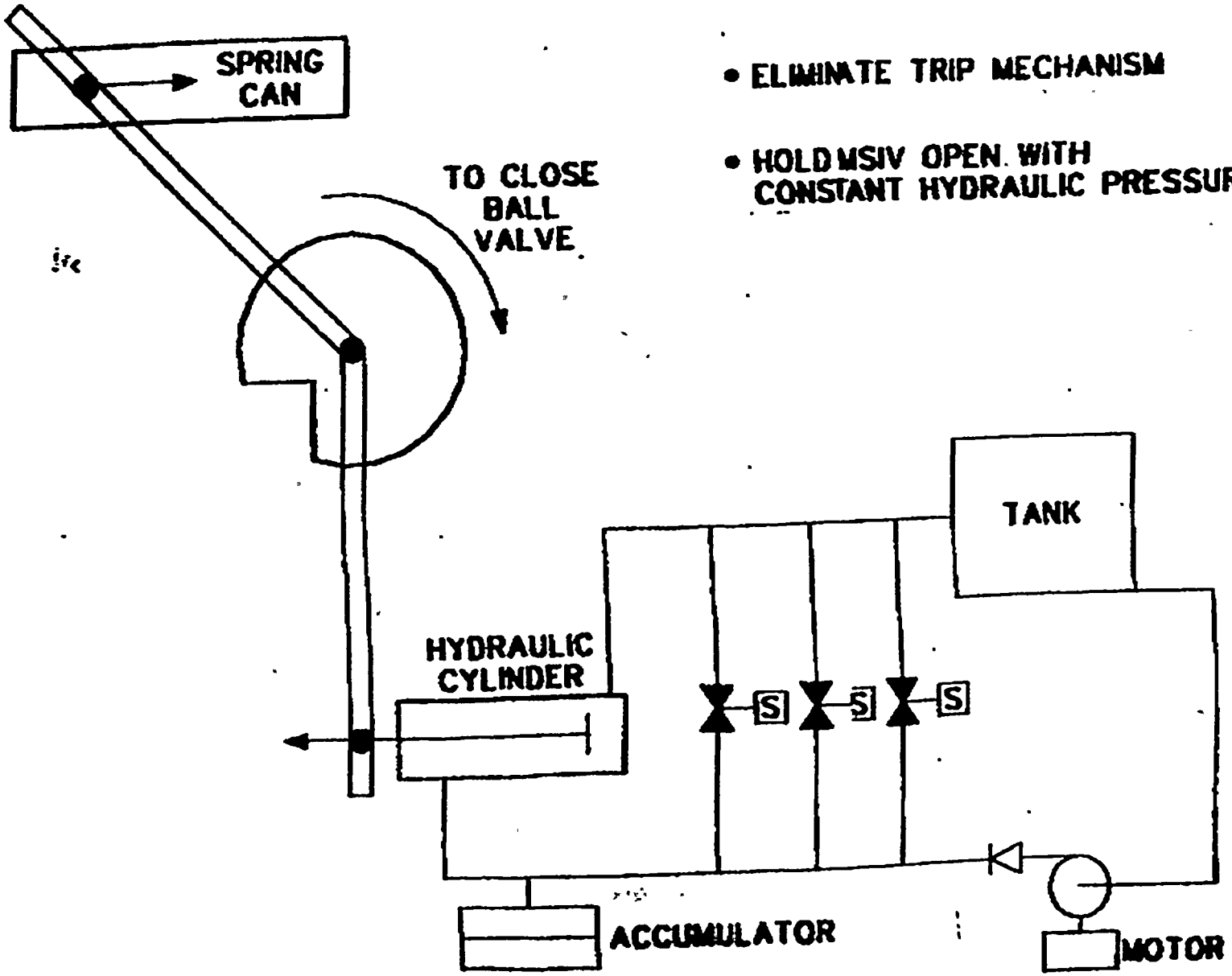
V. Conclusion

For the foregoing reasons, Niagara Mohawk Power Corporation has demonstrated that it meets the requirements contained in 10CFR50.12(a) for the issuance of an exemption. Therefore, the requested exemption to permit operation of Nine Mile Point unit 2

during the time that the necessary effort to verify operability of the main steam isolation valves and ensure that they meet their intended function over the design life of the station are being performed, and to allow any changes to the facility required as a result of this effort to be completed prior to proceeding beyond the low power physics tests shoud be granted.

ATTACHMENT 1

MSIV CLOSURE MECHANISM



- ELIMINATE TRIP MECHANISM
- HOLD MSIV OPEN WITH CONSTANT HYDRAULIC PRESSURE

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