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FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
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RECIP. NAME RECIPIENT AFFILIATION
ADENSAM, E. G. BWR Project Directorate 3

SUBJECT: Requests schedular exemption for installation of addl fuses for protection of certain containment penetrations to permit completion of const, testing & post-test review. Exemption will not cause addl const or operational activities.

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NIAGARA MOHAWK

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

October 15, 1986
(NMP2L 0908)

Ms. Elinor G. Adensam, Director
BWR Project Directorate No. 3
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Washington, DC 20555

Dear Ms. Adensam:

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

Niagara Mohawk Power Corporation's letter of August 29, 1986 identified backup overcurrent devices for certain containment penetrations which will be installed during the mini-outage. The mini-outage will occur within 12 months after commencing power operation. As discussed in detail in Attachment I to this letter, Niagara Mohawk requests that, in accordance with the provisions of 10 C.F.R. Section 50.12(a) and 10 C.F.R. Part 50, Appendix A, General Design Criterion 50, a schedular exemption be granted to permit the completion of construction, testing, and post-test review for the installation of these backup overcurrent devices subsequent to fuel loading.

This exemption has been reviewed and found to be authorized by law and consistent with the common defense and security. The attachment to this letter demonstrates that the requested exemption presents no undue risk to the health and safety of the public and that special circumstances are present that justify granting the exemption.

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 Statement of Considerations 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, 20 NRC 1343, 1400 (October 29, 1984). There, 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 matters and, thus, such grants are consistent with the common defense and security.



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The proposed exemption has been analyzed as discussed in Attachment 1 and determined not to cause additional construction or operational activities which may significantly affect the environment. It does 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 Nuclear Regulatory Commission which may have a significant adverse environmental impact.

Niagara Mohawk is ready to meet with the cognizant Nuclear Regulatory Commission personnel to review this matter should you require additional information.

Very truly yours,

William J. Donlon
President

NLR/pns
2109G

Attachment

xc: W. A. Cook, NRC 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) | ) | |

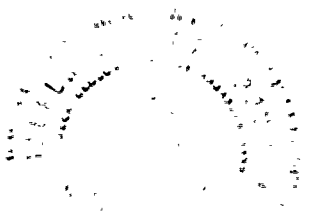
AFFIDAVIT

W.J. Donlon, being duly sworn, states that he is 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.

Subscribed and sworn to before me, a Notary Public in and the the State of Maryland and County of Montgomery, this 15 day of October, 1986.

Notary Public in and for
Montgomery County, Maryland

My Commission expires:
VERONICA L. HUBBARD
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires July 1, 1990



ATTACHMENT 1

PENETRATION FUSE PROTECTION

It is requested that a schedular exemption be granted for the installation of additional fuses for protection of certain containment penetrations shown on FSAR Figure 8.3-8B, sheet 13a (revised), and Table 1 below:

Table 1
Containment Penetrations

| | |
|---|---|
| 2CES*Z07E | 2CES*Z25E |
| 2CES*Z08E | 2CES*Z57E |
| 2CES*Z18E | 2CES*Z58E |
| 2CES*Z19E | 2CES*Z59E |
| 2CES*Z20E | 2CES*Z33E |
| 2CES*Z38E | 2CES*Z37E |

Electrical Penetration Fuse Protection

FSAR Section 8.3.1.1.5 describes the containment electrical penetration fuse protection as discussed below:

Modular type electrical penetrations are used to carry electrical power, instrumentation, and control cables inside the containment. These are designed in accordance with Regulatory Guide 1.63 IEEE-317-1976, and ASME Boiler and Pressure Vessel Code, Section III, Subsection NE for motor control components, to maintain mechanical and electrical integrity under normal and DBA conditions of the plant. All electrical penetration assemblies are designed to withstand the maximum possible fault current for the time sufficient for operation of the backup protective devices in case the primary protective devices fail to operate.

Two typical penetration assemblies are shown on Figure 8.3-8. Each penetration assembly consists of a stainless steel header plate that is bolted to the containment wall with O-ring aperture seals. The header plate holds the conductor modules which are sealed to the header plate with silicone O-ring seals. Each conductor module is a stainless steel tube carrying an insulated single conductor or conductor group. The conductor modules are sealed at each end with resilient high-temperature thermoplastic sealants. The conductors inside the modules are continuous from inside containment termination to outside containment termination. There are no internal splices of cables. Inside the containment, the modules terminate on a support plate. All penetrations have continuous pressure monitoring and leak detection devices.

All power and control feeders passing through electrical penetrations are provided with primary and backup protective devices which are capable of limiting the maximum heat produced by the fault current ($I^2t$) at the penetration to a value less than the thermal capability of the penetration.

The calculated worst case $I^2t$ for the different types of penetrations and corresponding penetration $I^2t$ capability are given in the following Table. This shows that the thermal capability of the electrical penetrations is not exceeded. FSAR Figure 8.3-8A gives a typical simplified one-line diagram indicating the location of the penetrations, the primary and backup breakers, and the data used for calculating the fault currents in the penetrations. For the purpose of calculating worst case $I^2t$, the fault is assumed to occur at the load side terminals of the penetrations. The feeders used for calculation are the shortest feeders for each cable size.

| Cable Voltage Rating | Cable Size AWG/KCM | Penet. Thermal Capability ($I^2t$) | Calculated Worst Case $I^2$ (t for 600V=.0166 Sec t for 13.8kV=0.5 Sec) |
|---|---|---|---|
| 600V | #10 | $9.42 \times 10^5$ | $4.61 \times 10^5$ |
| 600V | #8 | $2.30 \times 10^6$ | $9.00 \times 10^5$ |
| 600V | #6 | $5.72 \times 10^6$ | $1.53 \times 10^6$ |
| 600V | #4 | $1.47 \times 10^7$ | $2.24 \times 10^6$ |
| 600V | #2 | $2.83 \times 10^7$ | $1.09 \times 10^6$ |
| 13.8kV | 750 KCM | $8.19 \times 10^9$ | $4.27 \times 10^8$ |

FSAR Figure 8.3-8B shows samples of penetration capability curves plotted with the primary and backup protection device characteristic curves. The figure also indicated the continuous current rating and maximum short circuit current that may be available at the penetration of any particular size. The samples include all types and ratings of primary and backup protective devices and all types of the penetrations used.

Since the penetration capability curves and the primary and backup protection device characteristic curves are plotted with the maximum available short circuit current at any particular type of penetration, the samples represent the worst-case conditions.

Discussion

During meetings in August, 1986, the NRC staff raised a concern regarding the use of control power transformers for backup penetration protection on a number of circuits. For certain penetrations (shown on Table 1), Niagara Mohawk had taken credit for control power transformers for backup penetration protection requirements. These circuits use a primary protection device in accordance with Regulatory Guide 1.63. This arrangement is the same as at other previously licensed facilities. The staff took the position that in accordance with 10 C.F.R. Part 50 Appendix A, G.D.C. 50, circuit overload protection devices may not include the use of control power transformers.

On August 29, 1986, Niagara Mohawk submitted a response to this position indicating that the design would be changed to include a second fuse in these penetration circuits (Figure 8.3-8B, Sheet 13a, revised). This work will be completed before the end of the "mini-outage" to be conducted within 12 months of commencing power operation.

Summary

Deferral of the installation of the backup fuse protection until the mini-outage does not present an undue risk to the public health and safety. In the interim, circuit protection is provided by a qualified primary fuse and the use of control power transformers. These devices (August 22, 1986 letter 0842) maintain current below the rating of the containment penetration current carrying capability. The sequence of events leading to the need for backup protection (and its hypothesized failure) is remote during the period for which the exemption is requested. Such a sequence requires that a LOCA occur and, simultaneously, the occurrence of a circuit fault, with a failure of the associated primary fuse. Only if the backup protection also failed is there the possibility that the containment penetration might not maintain pressure integrity.

Supplement 3 to the NRC's Safety Evaluation Report indicated that "the probability of a large LOCA is now considered to be significantly lower than previously believed." Further, the combined probability of a LOCA, a circuit fault, failure of the primary protection, and failure of the backup control power transformer during the period in question is remote.

Conclusion

Deferral of the installation of the backup fuse protection for certain primary containment penetrations until the mini-outage does not present an undue risk to the public health and safety. Code of Federal Regulations Title 10, Part 50, Appendix A, General Design Criterion 50 requires that the reactor containment structure, including penetrations, shall be designed so that the containment can accommodate the calculated temperature and pressure conditions of a LOCA and meet its leakage rate criteria. The design features to meet General Design Criteria 50 is dependent, in part, upon electrical penetration integrity, which can be affected by electrical fault current. Sufficient electrical fault current could be created by the failure of the primary and backup protection devices in the circuits passing through the penetration. However, since the design provides primary protection and a means of backup protection, the probability of a LOCA simultaneous with a fault and protection system failure that affects containment integrity is remote.

Special Circumstances Are Present

Special circumstances are present which warrant issuance of the requested exemption. These special circumstances are discussed in accordance with the classification contained in 10 C.F.R. Section 50.12(a)(2):

(ii) Application of the regulation [10 C.F.R. Section 50.12] in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

Inasmuch as the control power transformer provides the function of a backup circuit protection, the underlying purpose of the rule may be achieved without the backup circuit protection until the mini-outage. The probability of the sequence of events occurring leading to penetration failure during the period of the exemption is remote.

(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.

This issue was only recently identified as a staff concern on this facility. Niagara Mohawk has made good faith efforts to comply with the regulation and is pursuing the installation of the backup protection devices by the mini-outage (12 months after commencing power operation) rather than at a later time, e.g., the first refueling outage. The necessary time is required for design, procurement, and installation.

The exemption is only temporary until the installation and testing of the backup devices is completed during the mini-outage. Niagara Mohawk has made good faith efforts to comply with the regulation when informed of the Staff's position in this matter and could not have known such position any earlier. Thus, special circumstances exist warranting the grant of the exemption.

Environmental Impact

The exemption request would allow operation of the plant for a specified time to allow the installation of fuses in the circuits protecting containment penetrations. The fuses (or lack of them) would not affect the processing of any effluent including radioactive effluent from the plant during normal operation. Code of Federal Regulations Title 10, Part 50, Appendix A, General Design Criteria 50 requires that the reactor containment structure, including penetrations, shall be designed so that the containment can accommodate the calculated temperature and pressure conditions of a LOCA and meet its leakage rate criteria. Since the interim design provides primary protection and a means of backup protection, the probability that containment integrity can be affected is low. The exemption would allow operation of the plant until the mini-outage.

The installation of the fuses has no impact on normal power operational releases. Since, in the case of an accident, the probability of simultaneous failures during the interim period of the qualified primary protection, the current power transformer, and the penetration integrity is low, there are no significant radiological or non-radiological environmental impacts associated with this exemption request.

The exemption is necessary to allow operation of the plant until the qualified backup protection is designed, procured, and installed. Therefore, the proposed exemption has been analyzed and determined not to cause additional construction or operational activities which may significantly affect the environment. It does 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 Nuclear Regulatory Commission which may have a significant adverse environmental impact.

The proposed exemption does not alter the land use for the plant, any water uses or impact water quality, air or ambient air quality. The proposed action does not affect the ecology of the site and vicinity and does not affect the noise emitted by station. Therefore, the proposed exemption does not affect the analysis of environmental impacts described in the environmental report.