

CATEGORY 1

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AUTH. NAME AUTHOR AFFILIATION
ABBOTT, R.B. Niagara Mohawk Power Corp.
RECIP. NAME RECIPIENT AFFILIATION
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SUBJECT: Forwards 120-day response to NRC GL 98-04, "Potential for Degradation of ECCS & CSS After LOCA Because of Construction & Protective Coating Deficiencies & Foreign Matl in Containment."

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TITLE: Generic Letter 98-04 - Potential for the Degradation of the Emergency

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Richard B. Abbott
Vice President
Nuclear Engineering

Phone: 315.349.1812
Fax: 315.349.4417

November 10, 1998
NMP1L 1380

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

RE: Nine Mile Point Unit 1
 Docket No. 50-220
 DPR-63

 Nine Mile Point Unit 2
 Docket No. 50-410
 NPF-69

Subject: *Generic Letter 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment"*

Gentlemen:

On July 14, 1998, the NRC issued Generic Letter (GL) 98-04 to alert addressees that foreign material continues to be found inside operating nuclear power plant containments. The GL also alerted addressees to the problems associated with the material condition of Service Level 1 protective coatings inside the containment and requested information under 10CFR50.54(f) to evaluate the addressees' programs for ensuring that Service Level 1 protective coatings inside containment do not detach from their substrate during a design basis Loss of Coolant Accident (LOCA) and interfere with the operation of the Emergency Core Cooling System and the safety related Containment Spray (CS) System.

The GL required that licensees submit a written response within 120 days that would include the following information:

- (1) A summary description of the plant-specific program or programs implemented to ensure that Service Level 1 protective coatings used inside the containment are procured, applied, and maintained in compliance with applicable regulatory requirements and the plant-specific licensing basis for the facility. Include a discussion of how the plant-specific program meets the applicable criteria of 10 CFR Part 50, Appendix B, as well as information regarding any applicable standards, plant-specific procedures, or other guidance used for: (a) controlling the procurement of coatings and paints used at the facility, (b) the qualification testing of protective coatings, and (c) surface preparation, application, surveillance, and maintenance activities for protective coatings. Maintenance activities involve reworking degraded coatings, removing degraded coatings to sound coatings, correctly preparing the surfaces, applying new coatings, and verifying the quality of the coatings.

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(2) Information demonstrating compliance with item (i) or item (ii):

- (i) For plants with licensing-basis requirements for tracking the amount of unqualified coatings inside the containment and for assessing the impact of potential coating debris on the operation of safety related systems, structures, and components (SSCs) during a postulated design basis LOCA, the following information shall be provided to demonstrate compliance:
 - (a) The date and findings of the last assessment of coatings, and the planned date of the next assessment of coatings.
 - (b) The limit for the amount of unqualified protective coatings allowed in the containment and how this limit is determined. Discuss any conservatism in the method used to determine this limit.
 - (c) If a commercial-grade dedication program is being used at your facility for dedicating commercial-grade coatings for Service Level 1 applications inside the containment, discuss how the program adequately qualifies such a coating for Service Level 1 service. Identify which standards or other guidance are currently being used to dedicate containment coatings at your facility; or,
- (ii) For plants without the above licensing-basis requirements, information shall be provided to demonstrate compliance with the requirements of 10CFR50.46b(5), "Long-term cooling" and the functional capability of the safety related CS System as set forth in your licensing basis. If a licensee can demonstrate this compliance without quantifying the amount of unqualified coatings, this is acceptable. The following information shall be provided:
 - (a) If commercial-grade coatings are being used at your facility for Service Level 1 applications, and such coatings are not dedicated or controlled under your Appendix B Quality Assurance Program, provide the regulatory and safety basis for not controlling these coatings in accordance with such a program. Additionally, explain why the facility's licensing basis does not require such a program.



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Attachment 1 (Nine Mile Point Unit 1) and Attachment 2 (Nine Mile Point Unit 2) provide the requested information.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard B. Abbott", with a long horizontal line extending to the right from the end of the signature.

Richard B. Abbott
Vice President Nuclear Engineering

RBA/KLL/sc
Attachments

xc: Mr. H. J. Miller, NRC Regional Administrator
Mr. S. S. Bajwa, Director, Project Directorate I-1, NRR
Mr. G. K. Hunegs, Senior Resident Inspector
Mr. D. S. Hood, Senior Project Manager, NRR
Records Management



UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
NIAGARA MOHAWK POWER CORPORATION) Docket No. 50-220
) Docket No. 50-410
Nine Mile Point Nuclear Station Units 1 and 2)

Richard B. Abbott, being duly sworn, states that he is Vice President Nuclear Engineering 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 document attached hereto; and that the document is true and correct to the best of his knowledge, information, and belief.

NIAGARA MOHAWK POWER CORPORATION

By Richard B. Abbott
Richard B. Abbott
Vice President Nuclear Engineering

Subscribed and sworn to before me, a Notary Public in and for the State of New York and the County of Oswego, this 10th day of November, 1998.

Linda L. Jones
Notary Public in and for

Oswego County, New York

My Commission Expires:

March 3, 2000

LINDA L. JONES
Notary Public, State of New York
No. 01J04884609
Qualified in Oswego County
Commission Expires March 3, 2000

Commission Expires March 31
Qualified in Oswego County
No. 0104824203
Teresa Public State of New York
LINDA L. JONES

ATTACHMENT 1

REQUIRED INFORMATION

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT NO. 1

NRC REQUIRED INFORMATION NO. 1

A summary description of the plant-specific program or programs implemented to ensure that Service Level 1 protective coatings used inside the containment are procured, applied, and maintained in compliance with applicable regulatory requirements and the plant-specific licensing basis for the facility. Include a discussion of how the plant-specific program meets the applicable criteria of 10 CFR Part 50, Appendix B, as well as information regarding any applicable standards, plant-specific procedures, or other guidance used for: (a) controlling the procurement of coatings and paints used at the facility, (b) the qualification testing of protective coatings, and (c) surface preparation, application, surveillance, and maintenance activities for protective coatings. Maintenance activities involve reworking degraded coatings, removing degraded coatings to sound coatings, correctly preparing the surfaces, applying new coatings, and verifying the quality of the coatings.

NMPL RESPONSE

Niagara Mohawk Power Corporation (NMPC) has implemented controls for the procurement, application and maintenance of Service Level 1 protective coatings used inside the primary containment in a manner that is consistent with the licensing basis and regulatory requirements applicable to Nine Mile Point Unit 1 (NMP1). The requirements of 10CFR50 Appendix B are implemented through specification of appropriate technical and quality requirements for the Service Level 1 (safety related) coatings program which includes ongoing maintenance activities.

For NMP1, Service Level 1 coatings are subject to the requirements of ANSI N101.4, in conjunction with ANSI/ASME NQA-1-1983. Adequate assurance that the applicable requirements for the procurement, application, inspection, and maintenance are implemented is provided by procedures and programmatic controls, approved under NMPC's Quality Assurance program, which meets 10CFR50 Appendix B. NMPC is evaluating the guidance provided in EPRI TR-109937, "Guideline on Nuclear Safety-Related Coatings," and will implement, as appropriate, improvements to our existing programs and procedures for Service Level 1 coatings upon completion of the evaluation. This evaluation is scheduled to be completed for NMP1 by Refueling Outage No. 16 (RFO16), which is scheduled for spring 2001.



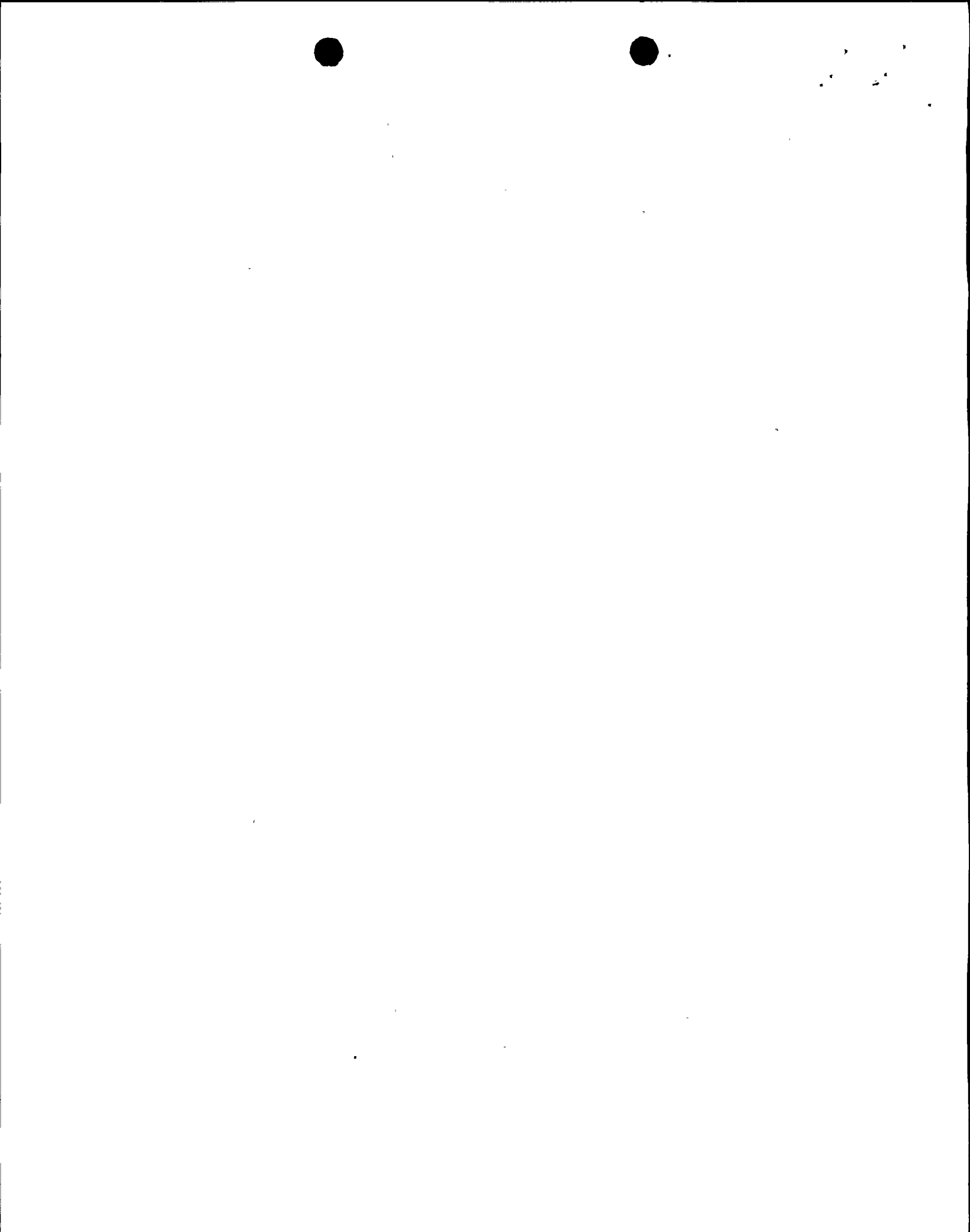
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- (a) Service Level 1 coatings for new applications or repair/replacement activities are procured Safety Related from vendor(s) with a Quality Assurance program meeting the applicable requirements of 10CFR50 Appendix B. The applicable technical and quality requirements which the vendor is required to meet are specified by NMP1 in procurement documents. Acceptance activities are conducted in accordance with procedures which are consistent with ANSI N45.2 requirements (e.g., receipt inspection, source surveillance). This specification of required and technical requirements combined with appropriate acceptance activities provides adequate assurance that the coatings received meet the requirements of the procurement documents.
- (b) The qualification testing of Service Level 1 coatings used for new applications or repair/replacement activities inside the primary containment meets the applicable requirements contained in the standards and regulatory commitments referenced above.
- (c) The surface preparation, application and surveillance during installation of Service Level 1 coatings used for new applications or repair/replacement activities inside the primary containment meet the applicable portions of the standards and regulatory commitments referenced above. Documentation of the completion of these activities is performed consistent with the applicable requirements. NMPC periodically conducts condition assessments of coatings inside the NMP1 primary containment. Coating condition assessments are conducted by Engineering as part of a nuclear engineering report, "Coating Inspections of the Primary Containment (Drywell) Inside surfaces and the Torus, Torus Vent Piping and Ring Header." This assessment is performed every refueling outage (since RFO14, spring 1997). The results of this inspection are documented in the above report and deficiencies, if any, are evaluated via the corrective action process. As localized areas of degraded coatings are identified, those areas are evaluated by Engineering and are scheduled for repair/replacement or removal, as necessary. The periodic condition assessments, and the resulting repair/replacement or removal activities, assure that the amount of coatings which may be susceptible to detachment from the substrate during a Loss of Coolant Accident (LOCA) is minimized.

NRC REQUIRED INFORMATION NO. 2

Information demonstrating compliance with item (i) or item (ii):

- (i) *For plants with licensing-basis requirements for tracking the amount of unqualified coatings inside the containment and for assessing the impact of potential coating debris on the operation of safety related systems, structures, and components (SSCs) during a postulated design basis LOCA, the following information shall be provided to demonstrate compliance:*



- (a) *The date and findings of the last assessment of coatings, and the planned date of the next assessment of coatings.*
 - (b) *The limit for the amount of unqualified protective coatings allowed in the containment and how this limit is determined. Discuss any conservatism in the method used to determine this limit.*
 - (c) *If a commercial-grade dedication program is being used at your facility for dedicating commercial-grade coatings for Service Level 1 applications inside the containment, discuss how the program adequately qualifies such a coating for Service Level 1 service. Identify which standards or other guidance are currently being used to dedicate containment coatings at your facility; or,*
- (ii) *For plants without the above licensing-basis requirements, information shall be provided to demonstrate compliance with the requirements of 10CFR50.46b(5), "Long-term cooling" and the functional capability of the safety related CS System as set forth in your licensing basis. If a licensee can demonstrate this compliance without quantifying the amount of unqualified coatings, this is acceptable. The following information shall be provided:*
- (a) *If commercial-grade coatings are being used at your facility for Service Level 1 applications, and such coatings are not dedicated or controlled under your Appendix B Quality Assurance Program, provide the regulatory and safety basis for not controlling these coatings in accordance with such a program. Additionally, explain why the facility's licensing basis does not require such a program.*

NMP1 RESPONSE

- (ii) NMP1 does not have licensing-basis requirements for tracking the amount of unqualified coatings inside the containment. In response to NRC Bulletin 96-03, replacement Emergency Core Cooling System (ECCS) strainers will be installed at NMP1 during Refueling Outage No. 15 (RFO15), currently scheduled for spring 1999. Consequently, the following discussion addresses the proposed resolution via NRC Bulletin 96-03.

The new ECCS pump suction strainers have been designed to perform satisfactorily assuming 100% failure of the primary containment coatings (qualified or unqualified) in the limiting LOCA pipe break steam/water jet zone of influence. The amount of coating debris is determined in accordance with the methodology documented in the BWR Owners' Group "Utility Resolution Guidance for ECCS Suction Strainer Blockage" (NEDO-32686), Section 3.2.2.2.1.1. The conservative methodology used to establish the amount of coating debris has been accepted by the NRC, as documented in the Safety Evaluation Report (SER) issued for NEDO-32686, dated August 20, 1998.



The methodology described above resulted in a bounding value of the maximum amount of coating debris, in pounds, as shown in Table 3, "Bounding Values of Coating Debris," of NEDO-32686. The maximum debris weight identified in Table 3 is 85 pounds. NMP1 doubled this value to 170 pounds to provide additional conservatism for a maximum amount of coating debris assumed for the suction strainer design that would be transported to the torus. Results of BWR Owners' Group LOCA testing of coupons representing unqualified coating systems provide compelling evidence that failure of typical coating systems which pass a visual inspection is highly unlikely in the first 30 minutes of the LOCA. Torus turbulence levels severe enough to maintain coating debris in suspension in the torus where debris would be available for accumulation on the ECCS strainers only exist for a maximum of 15 minutes following a LOCA. Since the coating debris will quickly settle to the bottom of the torus after the turbulence subsides, none of the coating debris (if eventually released some time after the first 30 minutes of the LOCA) would be available to accumulate on the strainers. Therefore, the debris from unqualified and/or degraded coatings which has passed a visual inspection is not included in the ECCS strainer debris design criteria. NMPC is also participating in the BWR Owner's Group Containment Coatings Committee and activities in progress are expected to result in an increase in the quantity of containment coating debris that can be accommodated on the strainers without challenging their functional capability.

- (a) NMP1 uses qualified Service Level 1 (safety related) coatings inside the primary containment at NMP1.



ATTACHMENT 2

REQUIRED INFORMATION

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT NO. 2

NRC REQUIRED INFORMATION NO. 1

A summary description of the plant-specific program or programs implemented to ensure that Service Level 1 protective coatings used inside the containment are procured, applied, and maintained in compliance with applicable regulatory requirements and the plant-specific licensing basis for the facility. Include a discussion of how the plant-specific program meets the applicable criteria of 10 CFR Part 50, Appendix B, as well as information regarding any applicable standards, plant-specific procedures, or other guidance used for: (a) controlling the procurement of coatings and paints used at the facility, (b) the qualification testing of protective coatings, and (c) surface preparation, application, surveillance, and maintenance activities for protective coatings. Maintenance activities involve reworking degraded coatings, removing degraded coatings to sound coatings, correctly preparing the surfaces, applying new coatings, and verifying the quality of the coatings.

NMP2 RESPONSE

Niagara Mohawk Power Corporation (NMPC) has implemented controls for the procurement, application, and maintenance of Service Level 1 protective coatings used inside the primary containment in a manner that is consistent with the licensing basis and regulatory requirements applicable to Nine Mile Point Unit 2 (NMP2). The requirements of 10CFR50 Appendix B are implemented through Specification NMP2-S401K, which provides the appropriate technical and quality requirements for the Service Level 1 (safety related) coatings program which includes ongoing maintenance activities.

For NMP2, Service Level 1 coatings are subject to the requirements of ANSI N101.2, ANSI N101.4, ANSI N5.12, and Regulatory Guide (RG) 1.54. The majority of the exposed surfaces within the drywell (i.e., primary containment liner, drywell head, biological shield wall, pipe rupture restraints, pipe supports, piping, and concrete) are coated with materials qualified in accordance ANSI N101.2 and are applied in accordance with RG 1.54. ANSI N101.4, in conjunction with ANSI/ASME NQA-1-1983, provides an adequate basis for complying with quality requirements for protective coatings applied to the various surfaces.

Adequate assurance that the applicable requirements for the procurement, application, inspection, and maintenance are implemented is provided by specifications, procedures and programmatic controls, approved under NMPC's Quality Assurance program, which meets 10CFR50 Appendix B. NMPC is evaluating the guidance provided in EPRI TR-109937, "Guideline on Nuclear Safety-Related Coatings," and will implement, as appropriate,



improvements to our existing programs, specification and procedures for Service Level 1 coatings upon completion of the evaluation. This evaluation is scheduled to be completed for NMP2 by Refueling Outage No. 7, (RFO7), which is scheduled for spring 2000.

- (a) Service Level 1 coatings used for new applications or repair/replacement activities are procured from vendor(s) with a Quality Assurance program meeting the applicable requirements of 10CFR50 Appendix B and ANSI/ASME NQA-1-1983, including the 1983 Addenda. The applicable technical and quality requirements which the vendor is required to meet are specified for NMP2 in an Engineering specification and procurement documents. Acceptance activities are conducted in accordance with Specification NMP2-S401K, which is consistent with ANSI/ASME NQA-1-1983 requirements (i.e., receipt inspection, source surveillance). This specification of required technical and quality requirements combined with appropriate acceptance activities provides adequate assurance that the safety related coatings received meet the requirements of the procurement documents.
- (b) The qualification testing of the Service Level 1 coatings used for new applications or repair/replacement activities inside the primary containment meets the applicable requirements contained in the standards and regulatory commitments referenced above.
- (c) The surface preparation, application and surveillance during installation of Service Level 1 coatings used for new applications or repair/replacement activities inside the primary containment meet the applicable portions of the standards and regulatory commitments referenced above. Documentation of the completion of these activities is performed consistent with the applicable requirements. NMPC periodically conducts condition assessments of Service Level 1 coatings inside the NMP2 primary containment. Coating condition assessments are conducted by Engineering as part of procedure N2-MSP-CNT-R005, "Primary Containment Structural Integrity Inspection," which is performed every refueling outage. Localized areas of degraded coatings are identified and evaluated via the corrective action process. The degraded coatings are evaluated by Engineering and are scheduled for repair/replacement or removal, as necessary. The periodic condition assessments, and the resulting repair/replacement or removal activities, assure that the amount of Service Level 1 coatings which may be suspected to detach from the substrate during a Loss of Coolant Accident (LOCA) is minimized.

NRC REQUIRED INFORMATION NO. 2

Information demonstrating compliance with item (i) or item (ii):

- (i) *For plants with licensing-basis requirements for tracking the amount of unqualified coatings inside the containment and for assessing the impact of*



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potential coating debris on the operation of safety related systems, structures, and components (SSCs) during a postulated design basis LOCA, the following information shall be provided to demonstrate compliance:

- (a) The date and findings of the last assessment of coatings, and the planned date of the next assessment of coatings.*
 - (b) The limit for the amount of unqualified protective coatings allowed in the containment and how this limit is determined. Discuss any conservatism in the method used to determine this limit.*
 - (c) If a commercial-grade dedication program is being used at your facility for dedicating commercial-grade coatings for Service Level 1 applications inside the containment, discuss how the program adequately qualifies such a coating for Service Level 1 service. Identify which standards or other guidance are currently being used to dedicate containment coatings at your facility; or,*
- (ii) For plants without the above licensing-basis requirements, information shall be provided to demonstrate compliance with the requirements of 10CFR50.46b(5), "Long-term cooling" and the functional capability of the safety related CS System as set forth in your licensing basis. If a licensee can demonstrate this compliance without quantifying the amount of unqualified coatings, this is acceptable. The following information shall be provided:*
- (a) If commercial-grade coatings are being used at your facility for Service Level 1 applications, and such coatings are not dedicated or controlled under your Appendix B Quality Assurance Program, provide the regulatory and safety basis for not controlling these coatings in accordance with such a program. Additionally, explain why the facility's licensing basis does not require such a program.*

NMP2 RESPONSE

- (i) NMP2 monitors the amount of unqualified coatings inside the primary containment and assesses the impact of potential coating debris on the operation of safety related SSCs during a postulated design basis LOCA.**
 - (a) The date of the latest condition assessment at NMP2 was June, 1998. The results of this condition assessment indicated that the amount of degraded coatings was minimal (approximately 200 - 400 square feet) and thus will have no effect on the safety function of any safety related SSCs. The identified degraded coatings are currently scheduled to be repaired during RFO7 in accordance with plant procedures. The next condition assessment at NMP2 is scheduled for RFO7.**



- (b) The limit for unqualified coatings, approximately 17,740 square feet, is documented in Table 6.1-3 of the NMP2 Updated Safety Analysis Report (USAR). This limit was established during plant licensing. Consistent with applicable regulatory requirements, the type and quantity of debris were not explicitly considered when the original calculations for the ECCS strainer head loss were performed.

In response to NRC Bulletin 96-03, large passive replacement ECCS strainers have recently been installed at NMP2. Consequently, the following discussion addresses the proposed resolution via NRC Bulletin 96-03.

The new ECCS pump suction strainers have been designed to perform satisfactorily assuming 100% failure of the primary containment coatings (qualified or unqualified) in the limiting LOCA pipe break steam/water jet zone of influence. The amount of coating debris is determined in accordance with the methodology documented in the BWR Owners' Group Utility Resolution Guidance for ECCS Suction Strainer Blockage (NEDO-32686), Section 3.2.2.2.1.1. The conservative methodology used to establish the amount of coating debris has been accepted by the NRC, as documented in the Safety Evaluation Report (SER) issued for NEDO 32686, dated August 20, 1998.

The methodology described above resulted in a bounding value of the maximum amount of coating debris, in pounds, as shown in Table 3, "Bounding Values of Coating Debris," of NEDO-32686. The maximum debris weight identified in Table 3 is 85 pounds. In addition to the 85 pounds of coating debris in the zone of influence, the strainers were designed to accommodate 100% failure of all Table 6.1-3 unqualified coatings with 100% transport to the suppression pool. This amount accounts for potential debris which may result from coatings which are unqualified and/or degraded. Results of the BWR Owners' Group LOCA testing of coupons representing unqualified coating systems provide compelling evidence that failure of typical unqualified coating systems which pass a visual inspection is highly unlikely in the first 30 minutes of the LOCA. Suppression pool turbulence levels severe enough to maintain coating debris in suspension in the pool where debris would be available for accumulation on the ECCS strainers only exist for a maximum of 15 minutes following a LOCA. Since the coating debris will quickly settle to the bottom of the suppression pool after the turbulence subsides, none of the coating debris (if eventually released some time after the first 30 minutes of the LOCA) would be available to accumulate on the strainers. In sizing the replacement ECCS strainers for NMP2, no credit was taken for the delayed release of coating debris; therefore, these designs are conservative with respect to the limit on this coating debris source. NMPC is also participating in the BWR Owners'



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Group Containment Coatings Committee and activities in progress are expected to result in an increase in the quantity of containment coating debris that can be accommodated on the strainers without challenging their functional capability.

- (c) NMP2 uses qualified Service Level 1 (safety related) coatings inside the primary containment at NMP2.



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