

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

SUBJECT: Forwards response to RAI re GL 98-04, "Potential for Degradation of ECCS & CSS After LOCA Because of Const & Protective Coating Deficiencies & Foreign Matl in Containmentment."

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • Richland, Washington 99352-0968

November 11, 1998
GO2-98-193

Docket No. 50-397

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

Gentlemen:


Subject: WNP-2, OPERATING LICENSE NPF-21,
RESPONSE TO REQUEST FOR INFORMATION RELATED TO
GENERIC LETTER 98-04

Reference: NRC Generic Letter 98-04, dated July 14, 1998, "Potential for Degradation of the
Emergency Core Cooling System and Containment Spray System after a Loss-of-
Coolant Accident because of Construction and Protective Coating Deficiencies and
Foreign Material in Containment"

In the referenced generic letter, the Staff requested that the Supply System issue a written response that provides, in part, information regarding programs for insuring protective coatings inside containment comply with all applicable regulatory requirements. The Staff also requested information about unqualified protective coatings. Included in the attachment is additional detail on the Staff's request, as well as information provided by the Supply System in response to that request.

Should you have any questions or desire additional information regarding this matter, please contact me or Mr. PJ Inserra at (509) 377-4147.

Respectfully,


J. Parrish
Chief Executive Officer
Mail Drop 1023

Attachment

cc: EW Merschoff - NRC RIV
GA Pick - NRC RIV
C Poslusny, Jr. - NRR

NRC Sr. Resident Inspector - 927N
DL Williams - BPA/1399
PD Robinson - Winston & Strawn

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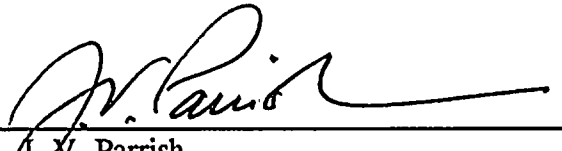
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STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Response To Request For Information
Related to Generic Letter 98-04

I, J. V. Parrish, being duly sworn, subscribe to and say that I am the Chief Executive Officer for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.


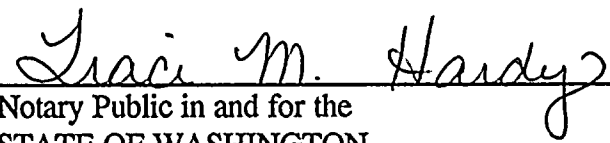
DATE 11 November, 1998



J. V. Parrish
Chief Executive Officer

On this date personally appeared before me J. V. Parrish, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

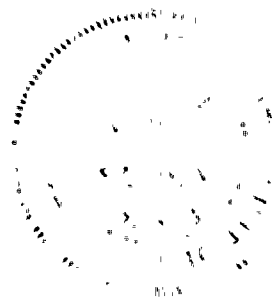
GIVEN under my hand and seal this 11th day of November 1998.

Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennelworth, WA

My Commission Expires Aug 9, 1999



ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 1 of 7

NRC Request:

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.

Supply System Response:

The Supply System has implemented controls for the procurement, application, and maintenance of Service Level 1 protective coatings used inside the containment in a manner that is consistent with the plant licensing basis and applicable regulatory requirements. The terms "coatings" and "paints" are considered synonymous for the purposes of this response. The requirements of 10 CFR Part 50, Appendix B are implemented through the specification of appropriate technical and quality requirements, as further discussed, for Service Level 1 coatings programs which includes ongoing maintenance activities.

Service Level 1 coatings at the Supply System are subject to the requirements of ANSI N 101.2, 1972, "Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities," ANSI N 101.4, 1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities," and applicable sections of ANSI N 5.12, "Protective Coatings (Paints) for the Nuclear Industry." Adequate assurance that the applicable requirements for procurement, application, inspection, and maintenance of Service Level 1 coatings are implemented is provided by procedures and programmatic controls approved under the Supply System's Quality Assurance Program.

Regarding procurement controls, 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 10 CFR Part 50, Appendix B. Acceptance activities are conducted in accordance with procedures which are consistent with the requirements (e.g., receipt inspection, source surveillance, etc.) of ANSI N 101.4 and ANSI N 45.2, 1971, "Quality Assurance Requirements for Nuclear Power Plants." Specific quality requirements combined with appropriate acceptance activities provide adequate assurance that the coatings received meet the requirements of the procurement documents.

ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 2 of 7

In the case of the newer state-of-the-art Design Basis Accident (DBA) tested coatings, they are procured as commercial grade and subsequently dedicated for use. The applicable technical and quality requirements which the vendor is required to meet are specified by the Supply System in procurement documents.

Regarding qualification testing, the qualification testing of Service Level 1 coatings used for new applications or used as maintenance coatings for repair/replacement activities inside containment meets the applicable requirements contained in ANSI N 101.4, ANSI N 45.2, 1971, and Regulatory Guide (RG) 1.54, June, 1973, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants." These coatings have also been evaluated to meet the testing standards of ANSI N 101.2 and ASTM D 3911, 1989, "Standard Method for Evaluating Coatings used in Light-Water Nuclear Power Plants at Simulated Design Basis Accident (DBA) Conditions."

Two 10 CFR Part 50, Appendix B coating manufacturers were used at the Supply System at the time of construction; Ameron and Keeler & Long. The technology used at that time was based upon resins that were available during the 1970s and 1980s. To coat over these coating systems with more "surface tolerant" products, several concerns have been addressed in the Supply System's Maintenance Coating Program. For example:

1. Adhesion over coated surfaces that are not as clean as during the construction phase. Therefore, surface tolerant characteristics are desirable for maintenance coatings. These properties are part of the coating formulations used at the Supply System and are considered during the qualification testing process.
2. Surface preparation will not be the same as during construction due to several factors, namely:
 - confined spaces/inaccessibility
 - dose considerations (ALARA)
 - inability (in most cases) to abrasive blast

Therefore, the coatings selected for use within Service Level 1 areas are not only tested to radiation/DBA criteria, but are also surface tolerant as previously discussed. They can be applied over tight rust or under damp or wet conditions, such that coating formulations "do the work" that would otherwise have to be done by workers to ensure adequate surface preparation.

3. Low solvent epoxy formulations or 100% solids coatings are used which will minimize health risks for workers performing coating applications, and have a minimal impact on activated carbon filtration equipment. These coatings have low or no volatile organic compounds (VOCs).

ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 3 of 7

The qualification of coatings to be placed over "in place" Service Level 1 coatings is performed in the following manner:

1. Screening "state-of-the-art" products that are available in the marketplace.
2. Testing of products; Maintenance state-of-the art coatings when used in combination with applied, qualified coatings together have been radiation and DBA tested to demonstrate a qualified coating "system." These coatings have been qualified in combination in order to be a qualified coating "system," using ASTM D 3911 procedures and acceptance criteria of ANSI N 101.2.
3. Purchasing and commercial grade dedication of such products under 10 CFR Part 50, Appendix B program requirements.
4. Application of such material by painters trained under ASTM 101.4 Level 1 criteria using the same surface preparation and application methods as used for radiation and DBA testing (ASTM D 3911).

The Supply System's Maintenance Coating Program follows the guidelines of ANSI N 101.4 and is implemented by an approved procedure (PPM 10.2.14, "Maintenance Coating Program") and a full scale coatings program which includes:

1. "Hands on" and lecture training of all painters for Service Level 1 applications.
2. Training of inspectors.
3. A full instruction Coatings Manual incorporating the present state-of-the-art products and methods for all areas of the plant (Level 1 included).

The surface preparation, application and surveillance during installation of Service Level 1 coatings used for new applications or repair/replacement activities inside containment meets the requirements established for DBA testing performed for each coating system and the regulatory guidelines of RG 1.54, June, 1973. Documentation of completion of these activities is performed consistent with the applicable requirements. These practices are described in ANSI N 101.4 and ASTM standards to which the Supply System has a regulatory commitment. The Supply System recognizes that the NRC has not formally endorsed many of the more recent ASTM standards, but nonetheless, they provide useful information which can be appropriately applied to provide assurance that repair/replacement activities on Service Level 1 coatings are effective in maintaining the acceptability of the coatings.

The Supply System periodically conducts condition assessments of Service Level 1 coatings inside containment as part of the Maintenance Coating Program. Unqualified coatings are also assessed on a periodic basis. At the last refueling outage (Spring 1998) an assessment of Level 1 and unqualified coatings was performed by a qualified coatings engineer. The coatings engineer also used a video camera to facilitate further reviews and the planning of coating

ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 4 of 7

work for future refueling outages. As localized areas of degraded coatings are identified, those areas are evaluated and scheduled for repair or replacement. The periodic condition assessments, and the resulting repair/replacement activities, ensure that the amount of Service Level 1 coatings which may be susceptible to detachment from the substrate during a DBA is minimized.

For maintenance activities, maintenance coatings used at the Supply System are different in formulation than those used during initial construction to allow for a more effective maintenance program. These state-of-the-art maintenance coatings have been screened for acceptability, radiation/DBA tested in combination with coatings presently used in the plant, and applied with plant approved procedures that ensure surface preparation is consistent with that used for DBA acceptance testing.

NRC Request:

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 SSCs [systems, structures, and components] 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.

Supply System Response:

The Supply System does not have specific licensing-basis requirements for tracking the amount of unqualified coatings inside the containment. We do, however, manage our containment work control process so that the amount of unqualified or degraded coatings does not exceed licensing-basis limits as specified in the Final Safety Analysis Report (FSAR). Supply System procedures only permit the application or use of qualified coatings inside containment for new applications, or for repair/replacement activities associated with Service Level 1 applications. Unqualified coatings would only be permitted to be applied over existing unqualified coatings, so that the area of unqualified coatings inside containment does not increase. The Supply System has assessed, as will be discussed later, the impact of potential coating debris on the operation of safety-related SSCs during a postulated design basis LOCA.

The Supply System last performed a coatings condition assessment for both qualified and unqualified coatings during the Spring 1998 refueling outage. Results of this condition assessment were that repairs were made as appropriate for qualified coatings using procedures, products, and inspection techniques that would continue to classify Level 1 coatings as "qualified systems." Unqualified coatings with indications of degradation were noted, and found to be acceptable, with repairs to some coatings expected to occur during the next refueling outage. Observations were made for planning future work activity as appropriate.

ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 5 of 7

The next containment coatings condition assessment is scheduled for the next refueling outage (Fall 1999). Additional qualified coating repairs will be made as necessary in accordance with the Supply System's Maintenance Coating Program.

NRC Request:

Provide 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.

Supply System Response:

The present limit for unqualified coatings in the containment is 5,000 square feet of organic paint in the drywell, and 4,000 square feet of Dimecote 6 (inorganic zinc) above the water level in the wetwell, as documented in Section 6.1.2 of the FSAR. This limit was established during initial plant licensing by a "walk-down" audit consistent with applicable regulatory requirements. These unqualified coatings are maintained using ASTM D5962 ("Standard Guide for Maintaining Unqualified Coatings (Paints) within Level 1 Areas of a Nuclear Facility") and PPM 10.2.14.

In response to NRC Bulletin 96-03, large capacity passive emergency core cooling system (ECCS) suction strainers have recently been installed at WNP-2. Consequently the following discussion addresses the anticipated licensing basis pending resolution of NRC Bulletin 96-03.

The design input to the ECCS strainer calculation for the amount of unqualified coatings, and qualified coatings in the steam/water jet zone of influence, is documented in the new ECCS suction strainer hydraulic calculation. Consequently, the amount of these coating materials must be managed, in addition to the quality of fibrous, particulate, and other miscellaneous debris, to assure that the analyzed functional capability of the ECCS is not compromised.

The new ECCS pump suction strainers have been designed to perform satisfactorily in the presence of 100% of the containment coatings which are installed in the loss-of-coolant accident (LOCA) pipe break steam/water jet zone of influence. This amount of coating debris is determined in accordance with the methodology documented in the BWR Owner's Group Utility Resolution Guidance (URG) document (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) on the URG document (Letter dated August 20, 1998, NRC to Mr. Rocky Sgarro, Pennsylvania Power and Light).

An additional amount of coating debris is added to the debris from the zone of influence. This amount accounts for potential debris which may result from coatings which are unqualified and/or degraded. Results of BWR Owner's 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. Only for the first 2 to 15 minutes of the LOCA event, depending upon the pipe break

ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 6 of 7

size, are suppression pool turbulence levels adequate to maintain coating debris in suspension in the pool where it would be available for accumulation on the ECCS suction strainers. Since the coating debris will quickly settle to the bottom of the suppression pool after the turbulence subsides, a minimal amount of the coating debris (if eventually released sometime after the first 30 minutes of the LOCA) would be available to accumulate on the strainers. In sizing the replacement ECCS strainers for the Supply System, no credit was taken for the delayed release of coating debris; therefore, calculated head losses are conservative with respect to the limit on this coating debris source. The entire 9,000 square feet of unqualified or degraded coatings as specified in the FSAR are assumed to contribute to the debris that causes strainer clogging during a LOCA. The Supply System is participating in the BWR Owner's Group Containment Coatings Committee. Committee activities in progress are expected to result in a decrease in the quantity of containment coating debris that would be expected to be deposited on the ECCS suction strainers, thus providing additional assurance of strainer functional capability.

NRC Request:

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.

Supply System Response:

The commercial grade dedication program at the Supply System is accomplished under the Supply System's 10 CFR Part 50, Appendix B, Quality Assurance Program, and is based upon the guidance contained in EPRI Report NP-5652, "Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)," as conditionally endorsed by NRC Generic Letters 89-02 and 91-05.

In addition, the Supply System's commercial dedication program for coatings is plant specific using the latest laboratory methods and procedures, and is briefly described as follows:

1. All new technology is first screened for acceptability.
2. Acceptable coatings are then sent on for radiation and DBA testing using guidance from ASTM D 3911. Liquid samples of such coatings are retained by the Supply System.
3. Applied coatings that have successfully passed radiation and DBA tests are noted. The Supply System laboratory is then requested to obtain a "fingerprint" of the formula by generating an infrared spectrometry "IR" curve for the coating material. The "IR" curve is permanently kept as a "control."

ATTACHMENT

RESPONSE TO REQUEST FOR INFORMATION RELATED TO GL 98-04

Page 7 of 7

4. When coatings are purchased in the future, the material is placed on hold while a sample is sent to the Supply System laboratory for an "IR" scan. This "fingerprint" is compared to the "fingerprint" of the previously tested batch on file. If "reasonably identical," the hold is released and the material is allowed to be used within Service Level 1 areas.

NRC Request:

For plants without the above licensing-basis requirements, information shall be provided to demonstrate compliance with the requirements of 10 CFR 50.46(b)(5), "Long-Term Cooling" and the functional capability of the safety-related CSS [Containment Spray System] as set forth in your licensing basis. If a licensee can demonstrate this compliance without qualifying the amount of unqualified coatings, this is acceptable.

Supply System Response:

This request is not applicable to the Supply System. As previously discussed, we manage our containment work control process so that the amount of unqualified coatings does not exceed licensing-basis limits, as specified in the FSAR, for the amount of unqualified or degraded coatings. The entire 9,000 square feet of unqualified or degraded coatings as specified in the FSAR are assumed to contribute to the debris that causes ECCS suction strainer clogging during a design basis LOCA.

NRC Request:

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.

Supply System Response:

This request is not applicable to the Supply System. The Supply System provides for commercial grade dedication of state-of-the-art Service Level 1 coatings used inside containment. The dedication and control of these coatings is accomplished under the Supply System's 10 CFR Part 50, Appendix B, Quality Assurance Program, and is based upon the guidance contained in EPRI Report NP-5652, "Guideline for the Utilization of Commercial Grade Items In Nuclear Safety Related Applications (NCIG-07)."

