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RECIP.NAME RECIPIENT AFFILIATION
VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Submits response to NRC 840507 request for addl info re environ qualification of safety-related equipment. Study re submergence in reactor auxiliary bldg scheduled for completion by 850331.

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MAY 31 1984

SERIAL: NLS-84-224

Director of Nuclear Reactor Regulation
Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
ENVIRONMENTAL QUALIFICATION OF SAFETY-RELATED ELECTRICAL EQUIPMENT

Dear Mr. Varga:

Carolina Power & Light Company (CP&L) has reviewed your letter dated May 7, 1984 requesting additional information concerning environmental qualification (EQ) of safety-related electrical equipment at the H. B. Robinson Steam Electric Plant Unit No. 2 (HBR2). These items were telecopied to us earlier and were discussed with your staff in a telephone conference call on May 4, 1984. As discussed, some of the requested information was included in CP&L's previous submittals; therefore that information is not being duplicated here, but will be referenced.

Your questions, along with CP&L's responses, are listed below:

NRC Question 1

Submit all applicable Justifications for Continued Operation (JCO) that are currently being relied upon and certify the following for each JCO associated with equipment that is assumed to fail:

> No significant degradation of any safety function or misleading information to the operator as a result of failure of equipment under the accident environment resulting from a design basis event will occur.

CP&L Response

Currently, CP&L is performing additional reviews of electrical equipment which may be affected by high energy line breaks outside containment. This issue is discussed further in our response to NRC Question 2.1. This evaluation will be completed prior to start-up from the current outage in order to determine if any JCOs will be required. The following items are being submitted because the installed equipment possesses a reduced installed qualified life and will require replacement on a determined schedule, not because the equipment is assumed to fail.

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

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Items 12, 13, and 14 - Rosemount Model 1153A Transmitters

These transmitters were identified as "not qualified" by the HBR2 SER regarding "Environmental Qualification of Safety-Related Electrical Equipment," dated January 5, 1983. The TER which accompanied the SER in an overall conclusion for these transmitters states that the qualification program cited as a reference satisfies the applicable criteria of the DOE Guidelines, except for aging degradation and qualified life. To correct this deficiency, a program to determine aging degradation and a qualified life has been established which includes analysis of similar components which have undergone thermal aging, as well as implementation of a maintenance-surveillance program to adjust this qualified life. A report, PEI-TR-83-6-4, "Final Report on the Evaluation of Qualification of Transmitter Model 1153A Provided by Rosemount, Inc., for Use in the H. B. Robinson SEP Unit 2," is being prepared as a result of the analysis. This report will be in the central file and available for review by March 31, 1985. The other deficiencies identified come from application of NUREG-0588/Category I criteria to the test reference. These transmitters were purchased at a time when a qualified (IEEE 323-1974) transmitter was not available.

Based on the criteria given in Supplement 2 to IEB 79-01B and the lack of availability of a fully qualified transmitter at the time of purchase, we believe that these transmitters are qualified to the applicable criteria of the DOR Guidelines. As this equipment is replaced, it will be upgraded with NUREG-0588/Category I qualified equipment.

As committed to under previous responses to IE Bulletin 79-01B, these Rosemount transmitters are on a ten (10) year installed life replacement program. These transmitters have been installed in a staggered replacement program which originated in 1981; therefore, replacement of the Rosemount 1153As will commence in 1991. Available transmitters determined as qualified for HBR2 environmental parameters at that time will be used for replacement. A tracking program will be in place by March 31, 1985 to assure timely replacement as each decade of operation is reached.

Items 16 and 17 - GEMS Transmitter Model Nos. XM52495 and XM36495

Review of the GEMS transmitter qualification test reports for the installed models have been received and reviewed. By analysis of materials it has been determined that the critical material is the fill fluid (chlorine base) which under radiation will become corrosive and damage its metal housing. However, this is not an immediate process and by analysis/calculation it has been determined that the installed transmitters have a qualified life of five years.

These transmitters will not be replaced during the current steam generator outage as initially reported in our March 2, 1984 submittal but will be replaced per the RG 1.97 compliance schedule established in our April 15, 1983 submittal to NRC. In the interim, the NRC SER (dated March 29, 1983) evaluation of Items 16 and 17 should still be valid after consideration of the fill fluid as stated above.

All other items initially stated as deficient within the Franklin TER have been reviewed and evaluated as qualified based on either additional data, analysis of materials, or similarity to qualified equipment.

NRC Question 2.1

The licensee should certify that in performing its review of the methodology to identify equipment within the scope of 10 CFR 50.49(b)(2) that the following steps have been addressed:

> A list was generated of safety-related electric equipment as defined in paragraph (b)(1) of 10 CFR 50.49 required to remain functional during or following design-basis Loss of Coolant Accident (LOCA) or High Energy Line Break (HELB) accidents. The LOCA/HELB accidents are the only design-basis accidents which result in significantly adverse environments to electric equipment which is required for safe shutdown or accident mitigation. The list was based on reviews of the Final Safety Analysis Report (FSAR), Technical Specifications, Emergency Operating Procedures, Piping and Instrumentation Diagrams (P&ID), and electrical distribution diagrams.

CP&L Response

As discussed with NRC during the conference call on May 4, 1984, the following statement describes the most limiting HBR2 accident conditions. At HBR2 the LOCA/HELB accidents are the only design-basis accidents which result in significantly adverse environments to electrical equipment which is required for safe shutdown or accident mitigation.

This statement modifies our previous position on HBR2 harsh environments as presented in our Environmental Qualification of Electrical Equipment, 90-day Report, Rev. 3, dated February 1, 1981 in response to NRC IE Bulletin 79-01B. Only the LOCA parameters within containment were considered as limiting in this report. Recent review of the Westinghouse H. B. Robinson Unit No. 2 Postulated Pipe Failure Analysis Outside of Containment, dated November 9, 1973, determined that an error in the maximum temperature achieved due to a steam blowdown pipe rupture would create a harsh environment. Appropriate SCEW sheet changes will be made and entered into our central file. Additional review of electrical equipment will be performed to determine if existing qualification data is still adequate. This activity will be completed prior to start-up from the current outage in order to determine if any JCOs will be required.

NRC Question 2.2

> The elementary wiring diagrams of the safety-related electrical equipment identified in Step 1 were reviewed to identify any auxiliary devices electrically connected directly into the control or power circuitry of the safety-related equipment (e.g., automatic trips) whose failure due to postulated environmental conditions could prevent required operation of the safety-related equipment.

CP&L Response

As agreed upon in the telephone conference call on May 4, 1984, this information was reviewed by CP&L and is included in CP&L's submittal dated March 2, 1984.

NRC Question 2.3

> The operation of the safety-related systems and equipment were reviewed to identify any directly mechanically connected auxiliary systems with electrical components which are necessary for the required operation of the safety-related equipment (e.g., cooling water or lubricating systems). This involved the review of P&IDs, component technical manuals, and/or systems descriptions in the FSAR.

CP&L Response

As agreed upon in the telephone conference call on May 4, 1984, this information was reviewed by CP&L and is included in CP&L's submittal dated March 2, 1984.

NRC Question 2.4

> Nonsafety-related electrical circuits indirectly associated with the electrical equipment identified in Step 1 by common power supply or physical proximity were considered by a review of the electrical design including the use of applicable industry standards (e.g., IEEE, NEMA, ANSI, UL, and NEC) and the use of properly coordinated protective relays, circuit breakers, and fuses for electrical fault protection.

CP&L Response

Nonsafety-related electrical circuits were reviewed using documentation stated within Section III of our March 2, 1984 submittal to NRC. This review was performed per the applicable criteria of the DOR Guidelines and supplements to determine any qualification requirements.

NRC Question 3

Provide certification that all design basis events which could potentially result in a harsh environment, including flooding outside containment, were addressed in identifying safety-related electrical equipment within the scope of 10 CFR 50.49(b)(1).

CP&L Response

Identification of electrical equipment within the scope of 10 CFR 50.49(b)(1) at HBR2 was based on the functional requirements to ensure: 1) the integrity of the reactor coolant boundary, 2) the capability to shut down the reactor and maintain it in a safe shutdown condition, and 3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures. The identified electrical equipment was evaluated against

DOR Guideline requirements to establish environmental qualification of this equipment. As stated in our IE Bulletin 79-01B Rev. 3 submittal dated February 1, 1981, the LOCA parameters inside containment were used as the limiting conditions to qualify the listed electrical equipment.

As reported in response to Item 2.1 above, the HELB outside of containment associated with steam blowdown pipe rupture will create an additional harsh environment area which is now under review. The schedule for completion is stated in Item 2.1.

As reported within our March 2, 1984 submittal to NRC concerning Resolution of Safety Evaluation Reports for Environmental Qualification of Safety Related Electrical Equipment, a study is underway concerning submergence in the Reactor Auxiliary Building and is scheduled for completion by March 31, 1985.

We believe the above information will satisfy your concerns and allow completion of the SER on EQ for HBR2. If you have any questions concerning this information, please contact Mr. Sherwood Zimmerman at (919) 836-6242.

Yours very truly,

A. B. Cutter - Vice President
Nuclear Engineering & Licensing

ONH/ccc (1060NH)

cc: Mr. J. P. O'Reilly (NRC-RII)
Mr. G. Requa (NRC)
Mr. Steve Weise (NRC-HBR)