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VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Forwards util resolution of generic environ qualification of safety-related electrical equipment deficiencies discussed in 830105 SER.

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CP&L
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SERIAL: NLS-84-083

MAR 02 1984

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
RESOLUTION OF SAFETY EVALUATION REPORTS
FOR ENVIRONMENTAL QUALIFICATION OF
SAFETY-RELATED ELECTRICAL EQUIPMENT

Dear Mr. Varga:

By letter dated January 5, 1983, Carolina Power & Light Company (CP&L) received the Safety Evaluation Report (SER) regarding the Environmental Qualification of Safety-Related Electrical Equipment at H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2). The SER contained a Technical Evaluation Report (TER), dated July 8, 1982, written by Franklin Research Center under contract to the NRC, which noted a number of environmental qualification (EQ) deficiencies for safety-related electrical equipment at HBR2. On January 18, 1984, a meeting was held with members of your staff to discuss CP&L's proposed method of resolution for these stated deficiencies and other EQ issues. The purpose of this letter is to provide documentation of the discussions held at the January 18th meeting.

Section I attached to this letter summarizes CP&L's resolution of the generic EQ deficiencies discussed in your SER. The proposed resolution for each of the qualification deficiencies listed in the TER is summarized in Section II. Section III includes a discussion of HBR2's compliance with the EQ rule, 10 CFR Part 50.49, including efforts on Regulatory Guide 1.97, "Instrumentation for Light Water-Cooled Nuclear Power Plants to Assure Plant and Environs Conditions During and Following an Accident."

In accordance with 10 CFR 50.49, final environmental qualification of the electrical equipment within the scope of this rule must be accomplished by the end of the second refueling outage after March 31, 1982 or by March 31, 1985, whichever is earlier. It should be noted that the second refueling outage past March 31, 1982 at HBR2 is currently scheduled for 1986. Therefore, CP&L's plans and schedule are to be in full compliance with 10 CFR 50.49 at HBR2 by March 31, 1985.

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In addition, at the January 18 meeting, the question of review of IE Notices (IEN) concerning EQ at HBR2 was raised. These Notices receive the standard review conducted by HBR2 plant personnel for all IE Notices. Each is reviewed for applicability to HBR2 and the applicability is documented. Specific to the EQ issue, IENs 82-03 and 82-52 were reviewed and appropriate actions have been taken. IEN 83-72 is currently under review and any appropriate actions will be taken. Detailed information is available in the plant files.

If you have any questions on this subject, please contact a member of our Nuclear Licensing Staff.

Yours very truly,

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

ONH/ccc (9546ONH)
Attachments

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

SECTION I

GENERIC EQUIPMENT QUALIFICATION DEFICIENCIES

DEFINITION OF NRC QUALIFICATION CATEGORIES

IA	Equipment Qualified
IB	Equipment Qualification Pending Modification
IIA	Equipment Qualification not Established
IIB	Equipment not Qualified
IIC	Equipment Satisfies all Requirements Except Qualified Life or Replacement Schedule Justified
IIIA*	Equipment Exempt from Qualification
IIIB*	Equipment Not in Scope of Qualification Review
IV	Documentation Not Made Available

* Equipment Qualification Categories Not Used at HBR2

(95460NH/ccc)

Response to Generic Issues Included in NRC Safety Evaluation Report (SER) dated January 5, 1983

1. Justification for Continued Operation

The SER required submission of justification for continued operation (JCO) for items in NRC categories IB, IIA, and IIB for which such information was not previously submitted to NRC or FRC. By letter dated February 11, 1983, CP&L responded to this request by indicating that the necessary justifications were provided in previous submittals. This conclusion was based on a review of the material previously submitted by CP&L and the TER-Appendix D conclusions. Subsequent telephone communications with NRC determined the need to submit additional JCO information to NRC for review on IIB Item Nos. 16 and 17. CP&L submitted this JCO information by letter dated March 4, 1983. After their review, NRC issued an SER dated March 29, 1983 which accepted all Category IIB items as justified for continued operation.

NRC also transmitted a "clarification" letter concerning JCO responses dated April 29, 1983, which required a re-review of H. B. Robinson Unit No. 2 Categories IB, IIA, and IV items.

After re-review of the TER items in Category IB it was determined that JCOs for the listed items (19, 20, 21, 31, and 32) are not required for the following reasons:

Item 19 - Level Switch, Madison, Model 5602 is no longer in use as a primary source of sump level data. Even though not physically removed, or rendered inoperative, failure of this instrument will not be misleading to an operator since primary containment sump water level measurement is provided by the Gems level transmitters (Reference JCO SER 3/29/83).

Items 20, 21 - Accelerometer, Endevco Model 2273AM20, Amplifier, Unholtz-Dickie Model 22CA2TR. The Endevco Accelerometer and Unholtz-Dickie Amplifier are part of the Babcock and Wilcox Valve Monitoring System installed per NUREG-0737 Item II.D.3 (Direct Indication of Relief and Safety Valve Position). These items are presently undergoing qualification testing. Since this test program is currently on-going, no recommendations for changeout or judgment on qualification can be made at this time. Upon test completion, CP&L will determine the appropriate action required. This action is scheduled to be complete by March 31, 1985. Areas of concern include connectors and accelerometer leads. During the HBR2 Steam Generator (S/G) Replacement Outage (currently on-going), CP&L will install Raychem protective sleeving on the accelerometer and amplifier connectors to provide an additional 5.4 years of qualified life. (Reference: Patel Engineers Valve Monitor System evaluation and recommendations dated December 30, 1982.) These items are considered Category IA and will be part of a preventive maintenance program to ensure continued qualification.

Item 31, Electrical Connector, AMP #53548-1. This item has been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in its locations. The analysis and evaluation are included in Report PEI-TR-83-6-13, "Final Report on the Evaluation of the

Qualification of the Model 53548-1 Connector Provided by AMP, Inc., for Use in the H. B. Robinson SEP Unit 2," dated February 9, 1983. This item is considered Category IA.

Item 32, Electrical Tape, 3M, Scotch 70. This item has been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in its locations. The analysis and evaluation are included in Report PEI-TR-83-6-14, "Final Report on the Evaluation of the Qualification of the Scotch 70 Tape Provided by 3M Company for Use in the H. B. Robinson SEP Unit 2," dated March 28, 1983. This item is considered Category IA.

After re-review of items in Category IIA it is determined that JCOs for the listed items (1, 5, 6, 7, 8, 9, 10, 11, 18, 22, 23, 25) are not required for the following reasons:

Item 1 - Solenoid Valve, ASCO LB8320A185. Evaluation of FRC TER deficiencies indicates that the wrong ASCO catalog item was reviewed by FRC. The proper valve catalog information (A185) states "provided with a High Temperature Coil (limit 130°C)." This is significantly higher than the 85°F average temperature status for the item reviewed by FRC.

Since this valve is located in a mild environment at HBR2, the radiation level has been determined to be negligible and does not preclude the use of this valve at its location. This item is considered Category IA.

Item 5 - Motorized Valve Actuator, Limitorque, SMB00. Installed actuators V866A and B have motors which are Class B insulation wound. The FRC TER questions the use of FIRL Final Report C-2485-01 to support qualification (documentation). Additional deficiencies stated were aging, qualified life, radiation and test sequence. Review by CP&L indicated that Limitorque was developing and testing a motor designed to meet IEEE 382-1980. It was to be available by the last quarter of 1983. When qualified, it was intended to replace the Class B motors with the qualified IEEE 382 versions. Currently, Limitorque has completed qualification of the motor but will not provide it as a qualification upgrading item to operators of the H. B. Robinson Unit 2 vintage. Therefore, CP&L will replace the complete motor/actuators on valves V866A and B. Replacement will be performed during the S/G replacement outage and will be completed by March 31, 1985.

Item 6 - Motorized Valve Actuator, Limitorque, SMB3. Installed actuators V744A and B have motor brakes which will perform their safety function within the first five minutes of a LOCA. The FRC TER stated that the time of motor brake failure could not be determined since the brake was not energized during the test. Similar testing of a motor-brake assembly by FIRL reported within F-C2232-01 discusses operation of both the Limitorque actuator and the motor-brake during pressure changes throughout the test. Proper motor-brake operation was observed seven (7) days after the start of test. Due to the failure of the motor-brake assembly reported in FIRL C-2485-01, although not in electrical operation during that seven day environmental simulation, it cannot conclusively be determined at what time into the simulation the failure occurred.

Due to the ambiguity of test report results, it is CP&L's intent to replace these actuators with brakeless model SB Limitorque actuators. These will be qualified to IEEE 382-1980. The replacement will be completed by March 31, 1985.

Items 7, 8 - Motorized Valve Actuator, Limitorque, SMB00, SMB-1. These items have been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in their locations. The analysis and evaluation are included in Report PEI-TR-83-6-2, "Final Report on the Evaluation of the Qualification of the Limitorque MOV, SMB Series Provided by the Limitorque Corporation for Use in the H. B. Robinson SEP Unit 2," dated April 4, 1983. These items are considered Category IA.

Items 9, 10, 11 - Flow, Pressure Transmitters, Fisher and Porter, 50 EP 1041. These items have been replaced by Rosemount Model 1153A transmitters at the same plant locations. The analysis and evaluation for these transmitters against the FRC TER deficiencies is not required. Status of Rosemount qualification is presented under Item 14.

Item 18 - Temperature Element, Rosemount, Model 176KF. This item has been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in its locations. The analysis and evaluation are included in Report PEI-TR-83-6-6, "Final Report on the Evaluation of the Qualification of the Model 176KF Thermocouples Provided by Rosemount, Inc., for Use in the H. B. Robinson SEP Unit 2," dated May 17, 1983. This item is considered Category IA.

Item 22 - Electric Motor, Westinghouse, Model 506UPZ. This item has been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in its location. The analysis established a twenty-five (25) year qualified life for this motor. HBR2 has been in operation for approximately thirteen (13) years at this time. Requirements for replacement will be included in a preventive maintenance program which will enable the appropriate action to be taken at the proper time to ensure continued qualification. The analysis and evaluation are included in Report PEI TR-83-6-8B, "Final Report on the Evaluation of the Qualification of the Model 506UP6 Residual Heat Removal (RHR) Pump Motor Provided by Westinghouse Electric Corporation for Use in the H. B. Robinson SEP Unit 2," dated June 24, 1983. This item is considered Category IA.

Item 23 - Electric Motor, Westinghouse, Model 685.5S. This item has been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in its location. As in Item 22, a twenty-five (25) year qualified life was also established and a similar program of preventive maintenance will be followed. The analysis and evaluation are included in Report PEI TR-83-6-8A, "Final Report on the Evaluation of Qualification of the Model 685.5S Reactor Containment Fan Cooler (RCFC) Motors Provided by Westinghouse Electric Corporation for Use in the H. B. Robinson SEP Unit 2," dated June 22, 1983. This item is considered Category IA.

Item 25 - Electric Cable, Continental Wire, CC2115. This item has been further analyzed and evaluated per the TER deficiencies and determined to be qualified for use in its locations. The analysis and evaluation are included in Report PEI-TR-83-6-10, "Final Report on the Evaluation of the Qualification of the Type CC2115 Cable Provided by Continental Wire and Cable for Use in the H. B. Robinson SEP Unit 2," dated March 15, 1983. This item is considered Category IA.

After re-review of the item in Category IV, it is determined that a JCO is not required for this item for the following reason:

Item 24 - Electrical Penetration, Crouse-Hinds. Initial qualification documentation had been transmitted to FRC when requested in 1982 for their review. Another set was transmitted to the NRC with CP&L's May 20, 1983 EQ Rule response. At the January 18, 1984 meeting with NRC it was stated that NRC would not perform any additional equipment review, and it was left up to the utility to state the adequacy of the documentation. Since the Crouse-Hinds electrical penetrations at H. B. Robinson are similar in design, function and documentation to the Point Beach Nuclear Plant and the Ginna Nuclear Plant electrical penetrations, and their penetrations are considered qualified, CP&L considers H. B. Robinson Unit 2 qualified for use at their locations per the documentation previously submitted. (Note: HBR2 LOCA parameters are enveloped by that of Point Beach Nuclear Plant and Ginna Nuclear Plant.) This item is considered Category IA.

All referenced reports pertaining to analysis and evaluation of the TER item deficiencies will be located in the central file and available for review and audit.

In summary, no additional JCOs are required for HBR2 equipment. In addition, HBR2 is currently shutdown for the S/G Replacement and Cycle 10 Refueling Outage. This outage is scheduled to continue until late 1984. Most of the remaining EQ work is scheduled to be completed during this outage. Therefore, there would not be any need for additional JCOs in any case.

2. Resolution of Deficiencies Associated with Equipment Items 12, 13, 14, 15, 16, and 17

Review of these items designated as Category II.B within the FRC TER was performed upon receipt of the NRC SER/TER. A JCO was written and submitted (March 4, 1983) on Items 16 and 17. Previously submitted JCOs on Items 12, 13, 14, and 15 and the March 4th JCO were reviewed by NRC and an SER approving CP&L's submittals was issued on March 29, 1983.

Items 12, 13, 14, and 15 - Transmitters, Rosemount 1153A. 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 the Qualification of Transmitters 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 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. Rosemount 1153D transmitters, which are currently qualified to IEEE 323-1974 for a qualified life of ten (10) years per the environmental parameters at H. B. Robinson Unit 2, will be available 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 - Level Transmitters, GEMS Model XM 52495, XM 36495. FRC TER deficiencies pertaining to these transmitters indicated that no area of qualification was satisfactory. GEMS was in the process of qualification testing a different model transmitter similar in design and dimensions but containing a different fill fluid (chlorine base vs. methyl base). The initial intent was to evaluate the tested model for conformance to HBR2 environmental parameters and analyze the fill fluids for similarity. Results indicate that although the parameters are acceptable, the fluid analysis does not allow acceptance by similarity. To resolve the deficiencies for these items, they will be replaced by qualified transmitters. Replacement will be performed and completed by March 31, 1985.

3. Resolution of the Submergence Deficiencies (Section 4.3.3 of the FRC TER)

The concern regarding submergence asks for an evaluation of the effect of submergence on specific level transmitters and in general for equipment outside containment. A study will be performed to evaluate the effect of the mounting of the new transmitters located in containment, the rate of flooding to determine useful time, and the effects of emergency procedures on the requirement for these instrument readings. For equipment outside containment, modifications to Auxiliary Building areas due to fire protection requirements will be studied to evaluate drain paths and water accumulations. Existing reports document no detrimental effects due to water build-up, but do not

account for recent modifications. A report on both these studies concerning submergence of safety-related electrical equipment in harsh environment areas located in containment and the Auxiliary Building will be completed by March 31, 1985.

4. Resolution of Concerns Regarding Operating Times on SCEWS (See Section 5 of the FRC TER)

Review of operating procedures, emergency procedures, and previous submittals indicates that the operating times shown on SCEWS are appropriate. All items required for long-term mitigation of an event are identified in the master list given in Revision 3 of HBR2 IE Bulletin 79-01B submittal.

Some of the TMI-related TER items do not have operating times assigned at this time since the Emergency Operating Procedures associated with use of these items are not yet complete. (See CP&L letter LAP-83-392, dated August 24, 1983 for schedule.) After completion, these procedures will be used to determine the operating times, which will then be entered on the appropriate SCEW sheets. The item is scheduled to be completed by March 31, 1985.

CP&L will update all previously submitted SCEW sheets which are missing operating times and have them available in the central files by March 31, 1985.

5. Resolution of the Staff Concern Regarding the Acceptability of the Temperature Profile Outside Containment and Radiation Levels Postulated to Exist Following a LOCA

In discussions between NRC and CP&L concerning this issue, the following resolution has been agreed upon for the temperature profile. Data was initially transmitted to NRC in a November 1973 study performed by Westinghouse entitled "H. B. Robinson Postulated Pipe Failure Analysis Outside of Containment"; but the original calculation method and figures are no longer available. Therefore, CP&L will provide a sample calculation of a single pipe failure analysis confirming the results of the Westinghouse report. CP&L will provide this data to NRC for Auxiliary Systems Branch review by June 1, 1984.

Discussions with NRC concerning radiation levels existing in containment following a LOCA indicates that NRC is satisfied with the information transmitted in CP&L responses to IE Bulletin 79-01B and subsequent supplements. This information was reviewed by the Accident Evaluation Branch and found acceptable as documented in a January 24, 1983 memorandum. Therefore, this item is no longer a concern. (Per telephone conversation between NRC and CP&L on February 1, 1984, G. Requa and P. Shemanski.)

SECTION II

PROPOSED RESOLUTION FOR SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

CP&L H. B. Robinson Unit 2 Approach to Reconciling TER Deficiencies

Review of the FRC TER indicates a number of aging and qualified life deficiencies stated for various TER items. Analysis was used to determine the acceptability of these items for use under HBR2 FSAR stated accident/post-accident conditions. The Arrhenius equation method was utilized to determine Time-Temperature Effects and Degradation Equivalency. After material analysis, the activation energy for the most susceptible material was identified for use in the Arrhenius equations. Calculation results provide the qualified life for the item and verification that the test conditions exceed the plant postulated post-accident phase.

Materials were analyzed to determine if synergism would affect operation of the items. The most frequently known synergistic agent was radiation. Radiation prior to thermal aging and dose rate effects were evaluated.

Another consideration for addressing deficiencies was similarity of qualified equipment to deficient items. Again, material analysis of the qualified equipment against material of the deficient item, as well as environmental parameter comparison, was used to establish qualification by similarity.

Investigation of applicable additional test reports and/or data was performed. This documentation was obtained from manufacturers, Architect Engineers, and other utilities. If HBR2 environmental parameters were enveloped and TER deficiencies covered, these documents were entered on the SCEW sheets and into the files.

Analysis and calculation work performed for deficient TER items were included in Section 4.0 of CP&L's May 20, 1983 response to NRC concerning 10 CFR 50.49. This was included to support our transfer of stated Category IB, IIA, and IIB items to Category IA.

Resolution of Specific Equipment Deficiencies

The attached tables and their notes describe the specific actions being taken to resolve deficiencies for each equipment item. Table 1 was presented at the January 18, 1984 meeting and summarizes the method of qualification for each item by TER Item Number. Table 2 summarizes qualification methods by type of equipment. The master list of electrical equipment important to safety is listed by system in Table 3.

TABLE 1

HBR2 TER SPECIFIC EQUIPMENT EQ DEFICIENCIES/SOLUTIONS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
1	Solenoid Valve	II.A	Documentation	Proper component specification sheet indicates the purchased and installed solenoid is proper for the environmental parameters of its location. (TMI-item) Item is considered Category IA.
2,3,4	Solenoid Valves	I.A	None	
5	Motorized Valve Actuator	II.A	Documentation, Aging, Qualified Life, Radiation, Test Sequence	Limitorque is currently testing a replacement motor to meet IEEE 323-1974. When qual. testing is complete, CP&L will review and decide if satisfactory for HBR2 use. If satisfactory, motor will be replaced. (V866A,B)
6	Motorized Valve Actuator	II.A	Documentation, Aging, Qualified Life, Radiation, Test Sequence, Margin	Limitorque has qualified a new model (SB) actuator which eliminates the need for the separate electric brake. Review of the test report will determine if qualified for HBR2 use. If satisfactory, actuator will be replaced. (V744A,B)

(92640NH/ccc)

TABLE 1 (Cont'd)

HBR2 TER SPECIFIC EQUIPMENT EQ DEFICIENCIES/SOLUTIONS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
7,8	Motorized Valve Actuator	II.A	Documentation, Similarity, Aging, Qualified Life	Patel Engineers Report PEI-83-6-2, dated April 14, 1983, addresses the deficiencies by providing either additional report data or calculations. Report concludes these items are qualified for use in their location. (V860A,B; V861A,B; V863A,B; V869; CVC381). Item is considered Category IA.
9,10,11	Flow, Pressure Transmitters	II.A	Similarity, Aging, Qualified Life, Instrument Accuracy	These items have been replaced by ROSEMOUNT, Model 1153A transmitters. (FT940, FT943, PT934, PT940, PT943) (See TER Items: 12, 13, 14, 15)
12,13, 14,15	Pressure, Level, Flow Transmitters	II.B	Aging, Qualified Life, Test Sequence, Margins	Patel Engineers Report PEI-83-6-4 is being prepared to address the deficiencies by providing additional analysis and calculations. Item is considered qualified pending test results/ documentation.
16,17	Level Transmitter	II.B	Documentation, Similarity, Aging, Qualified Life, T/P Profile, Spray, Submergence Test Sequence, Instrumentation Accuracy, Margins	GEMS has qualified a transmitter which is a direct replacement for the currently installed model. This test report will be studied for similarity acceptance of test data. If not established, replacement will be performed. (LT801,A,B,C,D; LT802A,B,C,D) Pending replacement with fully qualified equipment.

TABLE 1 (Cont'd)

HBR2 TER SPECIFIC EQUIPMENT EQ DEFICIENCIES/SOLUTIONS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
18	Temperature Element	II.A	Documentation, Aging, Qualified Life, T/P Profile, Spray, Instrumentation Accuracy	Patel Engineers Report PEI-TR-83-6-6, dated May 17, 1983, addresses the deficiencies by additional report data and/or calculations. Report concludes these items are qualified for use in their location (TE412B,D; TE422B,D; TE432B,D). Item is considered Category IA.
19	Level Switch	I.B	Documentation	No longer in use as primary source of sump level data. Therefore, do not need to be qualified. (Ref. JCO SER 3/29/83) (LS1925A,B)
20,21	Accelerometers, Preamps	I.B	None	These items are undergoing Qualification Testing. When complete, CP&L will review report data to determine if satisfactory for HBR2 use. Will replace if similarity is not adequate. (TMI-item)
22,23	Motors	II.A	Documentation, Similarity, Aging, Qualified Life	Patel Engineers Report PEI-TR-6-8A,B, dated June 23, 24, 1983, addresses the deficiencies by referencing additional report data and/or calculations. Report concludes these items are qualified for use in their location. (HVH-1,2,3,4; RHR A,B). Item is considered Category IA.

TABLE 1 (Cont'd)

HBR2 TER SPECIFIC EQUIPMENT EQ DEFICIENCIES/SOLUTIONS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
24	Electrical Penetrations	IV	Documentation not Made Available	Documentation made available to NRC for review with CP&L HBR2 May 20, 1983 submittal. As reviewed by CP&L, it is concluded that items are qualified for use in their locations. Item is considered Category IA.
25	Electrical Cable	II.A	Aging, Qualified Life, Duration, T/P Profile, Spray	Patel Engineers Report PEI-TR-83-6-10, dated March 15, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes these items are qualified for use in their location. Item is considered Category IA.
26,27, 28	Electrical Cable	I.A	None	
29	Electrical Cable	II.C	Aging, Qualified Life	Patel Engineers Report PEI-TR-83-6-11, dated February 10, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes these items are qualified for use in their location. Item is considered Category IA.

TABLE 1 (Cont'd)

HBR2 TER SPECIFIC EQUIPMENT EQ DEFICIENCIES/SOLUTIONS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
30	Electrical Cable Splice	II.C	Aging, Qualified Life	Patel Engineers Report PEI-TR-83-6-12, dated February 4, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its location. Item is considered Category IA.
31	Electrical Connector	I.B	Similarity	Patel Engineers Report PEI-TR-83-6-13, dated February 9, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its locations. Item is considered Category IA.
32	Electrical Tape	I.B	Similarity	Patel Engineers Report PEI-TR-83-6-14, dated March 28, 1983, addresses these deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its location. Item is considered Category IA.

TABLE 2

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

I. PRESSURE, D/P, AND LEVEL TRANSMITTERS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
9,10,11	Flow, Pressure Transmitters	II.A	Similarity, Aging, Qualified Life, Instrument Accuracy	These items have been replaced by ROSEMOUNT, Model 1153A Transmitters (FT940, FT943, PT934, PT940, PT943) (See TER Items: 12, 13, 14, and 15)
12,13, 14,15	Pressure, Level Flow Transmitters	II.B	Aging, Qualified Life, Test Sequence, Margins, Criteria regarding Test Failure, Submergence	Additional analysis and documentation. At end of qualified life replacement with qualified Rosemount 1153D transmitters.
16,17	Level Transmitter	II.B	Documentation, Similarity Aging, Qualified Life, T/P Profile, Spray, Submergence, Test Sequence, Instrumentation Accuracy, Margins, Functional Test	Replacement with qualified GEMS, XM 54854 transmitters.
19	Level Switch	I.B	Documentation	No longer in use as primary source of sump level data. Therefore, does not need to be qualified. (Ref. JCO SER 3/29/83) (LS1925A,B)

(95460NH/ccc)

TABLE 2 (Cont'd)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

II. SOLENOID VALVES FOR AIR-OPERATED VALVES

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
1	Solenoid Valve	II.A	Documentation, Radiation Analysis	Proper component specification sheet indicates the purchased and installed solenoid is proper for the environmental parameters of its location. (TMI-Item)
2,3,4	Solenoid Valve	I.A	None	

(9546ONH/ccc)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

III. MOTORS (INCLUDING SPLICES AND BEARING/LUBRICANT)

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
22,23	Motors	II.A	Documentation, Similarity, Aging, Qualified Life	Patel Engineers Report PEI-TR-6-8A, B, dated June 23, 24, 1983, addresses the deficiencies by referencing additional report data and/or calculations. Report concludes these items are qualified for use in their location. (HVH-1, 2, 3, 4; RHR A, B)

TABLE 2 (Cont'd)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

IV. TEMPERATURE MEASUREMENT DEVICES

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
18	Temperature Element	II.A	Documentation, Aging, Qualified Life, T/P Profile, Spray, Instrumentation Accuracy, Functional Test	Patel Engineers Report PEI-TR-83-6-6, dated May 17, 1983, addresses the deficiencies by additional report data and/or calculations. Report concludes these items are qualified for use in their location (TE412B,D; TE422B,D; TE432B,D)

(95460NH/ccc)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

V. ELECTROPNEUMATIC (I/P) TRANSDUCERS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
	None			

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

VI. ELECTRICAL DISTRIBUTION DEVICES

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
24	Electrical Penetrations	IV	Documentation	Documentation made available to NRC for review with CP&L HBR2 May 20, 1983 submittal. In discussion with NRC at January 18, 1984 meeting, CP&L stated this item qualified based on submitted documentation.
25	Electrical Cable	II.A	Aging, Qualified Life, Duration T/P Profile, Spray, Radiation	Patel Engineers Report PEI-TR-83-6-10, dated March 15, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its locations.
26,27 28	Electrical Cable	I.A	None	
29	Electrical Cable	II.C	Aging, Qualified Life	Patel Engineers Report PEI-TR-83-6-11, dated February 10, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its locations.

(9546ONH/ccc)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

VI. ELECTRICAL DISTRIBUTION DEVICES (Cont'd)

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
30	Electrical Cable Splice	II.C	Aging, Qualified Life	Patel Engineers Report PEI-TR-83-6-12, dated February 4, 1983, addresses these deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its location.
31	Electrical Connector	I.B	Similarity	Patel Engineers Report PEI-TR-83-6-13, dated February 9, 1983, addresses the deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its locations.
32	Electrical Tape	I.B	Similarity	Patel Engineers Report PEI-TR-83-6-14, dated March 28, 1983, addresses these deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its location.

(95460NH/ccc)

TABLE 2 (Cont'd)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

VII. LIMIT SWITCHES FOR AIR-OPERATED VALVE/ACCOUSTICAL MONITORS

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
20,21	Accelerometers, Preamps	I.B	None	Additional analysis and documentation to establish qualified life. Modification to attain additional qualified life. Review of qualification Testing Report when completed to determine additional actions.

(9546ONH/ccc)

PROPOSED RESOLUTION OF SPECIFIC EQUIPMENT ENVIRONMENTAL QUALIFICATION DEFICIENCIES AT H. B. ROBINSON-2

VIII. MOTOR-OPERATED VALVES (INCLUDING LUBRICANTS)

TER NO.	COMPONENT	NRC CAT.	DEFICIENCY	PROPOSED SOLUTION
5	Motorized Valve Actuator	II.A	Documentation, Aging, Qualified Life, Radiation, Test Sequence	Replacement with qualified Limitorque SMB00 actuators.
6	Motorized Valve Actuator	II.A	Documentation, Aging, Qualified Life, Radiation, Test Sequence, Margin	Replacement with qualified Limitorque SB actuators.
7,8	Motorized Valve Actuator	II.A	Documentation, Similarity, Aging, Qualified Life	Patel Engineers Report PEI-TR-83-6-2, dated April 14, 1983, addresses these deficiencies by referencing additional data and/or calculations. Report concludes this item is qualified for use in its location. (V860A,B; V861A,B; V863A,B; V869; CVC381)

TABLE 3

SYSTEM: SAFETY INJECTION

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	V-866 A&B	5 26 26 32 NONE	A. LIMITORQUE VALVE MOTOR OPERATOR B. POWER CABLES - KERITE 600 VOLT POWER C. CONTROL CABLES - KERITE 600 VOLT CONTROL D. MOTOR-TO-LEAD SPLICES - SCOTCH #70 SILICON RUBBER TAPE INSULATION WITH VINYL TAPE OR EQUIVALENT E. LUBRICANTS AND GREASES (TEXACO NEBULA EPO TEXACO PREMIUM RB)	REPLACEMENT DATE 3/31/85 (A) ORIGINAL EQUIPMENT (B,C,D,E)	(NOTE A)
2	V-869	7 26 26 32 NONE	A. LIMITORQUE VALVE MOTOR OPERATOR B. POWER CABLES - KERITE 600 VOLT POWER C. CONTROL CABLES - KERITE 600 VOLT CONTROL D. MOTOR-TO-LEAD SPLICES - SCOTCH #70 SILICON RUBBER TAPE E. LUBRICANTS AND GREASES (TEXACO NEBULA EPO TEXACO PREMIUM RB)	ORIGINAL EQUIPMENT (A,B,C,D,E)	COMPLETE (NOTE B)
3	LS-1925 A&B	19	A. MADISON LEVEL SWITCH	ORIGINAL EQUIPMENT (A)	(SEE NOTE C)
4	C-3 D-2 D-8 D-9	24 31 30	A. CROUSE HINDS ELECTRICAL PENETRATION B. AMP TERMINAL LUG C. CABLE SPLICE - RAYCHEM HEAT SHRINK D. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A) INSTALLED DURING PRIOR OUTAGE (B,C,D)	COMPLETE (NOTE D)

(95460NH/ccc)

SYSTEM: REACTOR COOLANT

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	LT-459 LT-460 LT-461 LT-462	13 25	A. ROSEMOUNT LEVEL TRANSMITTERS B. INSTRUMENTATION CABLE-ANACONDA	INSTALLED DURING PRIOR OUTAGES (A) ORIGINAL EQUIPMENT (B)	(NOTE E)
2	PT-444 PT-445 PT-455 PT-456 PT-457	12 25	A. ROSEMOUNT PRESSURE TRANSMITTER B. INSTRUMENTATION CABLE-ANACONDA	INSTALLED DURING PRIOR OUTAGES (A) ORIGINAL EQUIPMENT (B)	(NOTE E)
3	B-2 B-5 B-9	24 NONE 31	A. CROUSE-HINDS ELECTRICAL PENETRATION B. CROUSE-HINDS ELECTRICAL CONNECTOR C. AMP TERMINAL LUG D. CABLE SPLICE - RAYCHEM HEAT SHRINK E. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A,B) INSTALLED DURING PRIOR OUTAGE (C,D,E)	COMPLETE (NOTE D)

(9546ONH/ccc)

SYSTEM: MAIN STEAM

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	FT-474 FT-475 FT-484 FT-485 FT-494 FT-495	14 25	A. ROSEMOUNT FLOW TRANSMITTER B. INSTRUMENTATION CABLE-ANACONDA	INSTALLED DURING PRIOR OUTAGES (A) ORIGINAL EQUIPMENT (B)	(NOTE E)
2	B-1 C-1	24 NONE 31 30 32	A. CROUSE-HINDS ELECTRICAL PENETRATION B. CROUSE-HINDS ELECTRICAL CONNECTOR C. AMP TERMINAL LUG D. CABLE SPLICE - RAYCHEM HEAT SHRINK E. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A,B) INSTALLED DURING PRIOR OUTAGE (C,D,E)	COMPLETE (NOTE D)

SYSTEM: FEEDWATER

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	LT-474 LT-475 LT-476 LT-477 LT-484 LT-485 LT-486 LT-487 LT-494 LT-495 LT-496 LT-497	13 25	A. ROSEMOUNT LEVEL TRANSMITTER B. INSTRUMENTATION CABLE-ANACONDA	INSTALLED DURING PRIOR OUTAGES (A) ORIGINAL EQUIPMENT (B)	(NOTE E)
2	C-1 C-2 C-4 C-9	24 NONE 31 30 32	A. CROUSE-HINDS ELECTRICAL PENETRATIONS B. CROUSE-HINDS ELECTRICAL CONNECTOR C. AMP TERMINAL LUG D. CABLE SPLICE - RAYCHEM HEAT SHRINK E. CABLE SPLICE - SCOTCH #70 SILICONE RUBBER	ORIGINAL EQUIPMENT (A,B) INSTALLED DURING PRIOR OUTAGE (C,D,E)	COMPLETE (NOTE D)

(9546ONH/ccc)

TABLE 3 (Cont'd)

SYSTEM: AUXILIARY COOLING

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	V-744 A&B	6 26 26 32 NONE	A. LIMITORQUE VALVE MOTOR OPERATOR B. POWER CABLES - KERITE 600 VOLT POWER C. CONTROL CABLES - KERITE 600 VOLT CONTROL D. MOTOR-TO-LEAD SPLICES - SCOTCH #70 SILICON RUBBER TAPE E. LUBRICANTS AND GREASES (TEXACO NEBULA EPO TEXACO PREMIUM RB)	REPLACEMENT DATE 3/31/85 (A) ORIGINAL EQUIPMENT (B,C,D,E)	COMPLETE (NOTE M)
2	RHR A&B	22 32 26 NONE	A. WESTINGHOUSE MOTORS-RESIDUAL HEAT REMOVAL PUMP B. MOTOR-TO-LEAD SPLICE - SCOTCH #70 C. POWER CABLES - KERITE D. LUBRICANTS AND GREASES (TEXACO PREMIUM RB)	ORIGINAL EQUIPMENT (A,B,C,D)	COMPLETE (NOTE F)
3	V-860 A&B V-861 A&B	8 26 26 32 NONE	A. LIMITORQUE VALVE MOTOR OPERATOR B. POWER CABLES - KERITE 600 VOLT POWER C. CONTROL CABLES - KERITE 600 VOLT CONTROL D. MOTOR-TO-LEAD SPLICES - SCOTCH #70 E. LUBRICANTS AND GREASES (TEXACO NEBULA EPO TEXACO PREMIUM RB)	ORIGINAL EQUIPMENT (A,B,C,D,E)	COMPLETE (NOTE B)
4	V-863 A&B	7 26 26 32 NONE	A. LIMITORQUE VALVE MOTOR OPERATOR B. POWER CABLES - KERITE 600 VOLT POWER C. CONTROL CABLES - KERITE 600 VOLT CONTROL D. MOTOR-TO-LEAD SPLICES - SCOTCH #70 E. LUBRICANTS AND GREASES (TEXACO NEBULA EPO TEXACO PREMIUM RB)	ORIGINAL EQUIPMENT (A,B,C,D,E)	COMPLETE (NOTE B)
5	D-2	24 31 30	A. CROUSE-HINDS ELECTRICAL PENETRATION B. AMP TERMINAL LUG C. CABLE SPLICE - RAYCHEM HEAT SHRINK D. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A) INSTALLED DURING PRIOR OUTAGE (B,C,D)	COMPLETE (NOTE D)

(9546ONH/ccc)

TABLE 3 (Cont'd)

SYSTEM: REACTOR PROTECTION

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	TE-412 B&D TE-422 B&D TE-432 B&D	18 25	A. ROSEMOUNT TEMPERATURE ELEMENT B. INSTRUMENTATION CABLE-ANACONDA	ORIGINAL EQUIPMENT (A,B)	(NOTE G)
2	C-4 C-9	24 31 NONE	A. CROUSE-HINDS ELECTRICAL PENETRATION B. CROUSE-HINDS ELECTRICAL CONNECTOR C. AMP TERMINAL LUG D. CABLE SPLICE - RAYCHEM HEAT SHRINK E. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A,B) INSTALLED DURING PRIOR OUTAGE (C,D,E)	COMPLETE (NOTE D)

(9546ONH/ccc)

TABLE 3 (Cont'd)

SYSTEM: CHEMICAL AND VOLUME CONTROL

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	CVC-200 A&B&C	3 26	A. ASCO SOLENOID VALVE B. CONTROL CABLE - KERITE	REPLACED DURING PRIOR OUTAGE (A) ORIGINAL EQUIPMENT (B)	COMPLETE (NOTE H)
2	CVC-381	7 16 26 32 NONE	A. LIMITORQUE VALVE MOTOR OPERATOR B. POWER CABLES - KERITE 600 VOLT POWER C. CONTROL GABLES - KERITE 600 VOLT CONTROL D. MOTOR-TO-LEAD SPLICES - SCOTCH #70 E. LUBRICANTS AND GREASES (TEXACO NEBULA EPO TEXACO PREMIUM RB)	ORIGINAL EQUIPMENT (A,B,C,D,E)	COMPLETE (NOTE B)
3	C-3 D-9	24 30	A. CROUSE-HINDS ELECTRICAL PENETRATION B. CABLE SPLICE - RAYCHEM HEAT SHRINK C. CABLE SPLICE - SCOTCH #70 SILICON RUBBER D. AMP TERMINAL LUG	ORIGINAL EQUIPMENT (A) INSTALLED DURING PRIOR OUTAGE (B,C,D)	COMPLETE (NOTE D)

(9546ONH/ccc)

SYSTEM: HVAC

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	V12-7 V12-9 V12-11 V12-13	4&2 26	A. ASCO SOLENOID VALVE B. CONTROL CABLE - KERITE	REPLACED DURING PRIOR OUTAGE (A) ORIGINAL EQUIPMENT (B)	COMPLETE (NOTE H)
2	HVH-1 HVH-2 HVH-3 HVH-4	23 32 26 NONE	A. WESTINGHOUSE MOTOR - CONTAINMENT FAN COOLER B. MOTOR-TO-LEAD SPLICE - SCOTCH #70 C. POWER CABLES - KERITE D. LUBRICANT AND GREASES (TEXACO PREMIUM RB)	ORIGINAL EQUIPMENT (A,B,C,D)	(NOTE I)
3	C-3 C-6 C-8 D-1 D-3 D-5	24 31 30	A. CROUSE-HINDS ELECTRICAL PENETRATION B. AMP TERMINAL LUG C. CABLE SPLICE - RAYCHEM HEAT SHRINK D. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A) INSTALLED DURING PRIOR OUTAGE (B,C,D)	COMPLETE (NOTE D)

(9546ONH/ccc)

SYSTEM: INFORMATION TO AID OPERATORS IN ACCIDENT DIAGNOSIS AND CONTROLS

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	N/A	20	A. ENDEVCO ACCELEROMETER	INSTALLED DURING PRIOR OUTAGE	(NOTE J)
2	N/A	21	A. UNHOLTZ-DICKIE PREAMPLIFIER	INSTALLED DURING PRIOR OUTAGE	(NOTE J)
3	PT-500 PT-501 PT-456 PT-457	15 12 27 28	A. ROSEMOUNT PRESSURE TRANSMITTER B. INSTRUMENTATION CABLE - ROCKBESTOS	INSTALLED DURING PRIOR OUTAGE (A,B)	(NOTE E)
4	N/A	29	A. SAMUEL MOORE INSTRUMENTATION CABLE	INSTALLED DURING PRIOR OUTAGE	COMPLETE (NOTE N)
5	N/A	24 30 31	A. CROUSE-HINDS ELECTRICAL PENETRATION B. CABLE SPLICE - RAYCHEM HEAT SHRINK C. AMP TERMINAL LUG D. CABLE SPLICE - SCOTCH #70 SILICON RUBBER	ORIGINAL EQUIPMENT (A) INSTALLED DURING PRIOR OUTAGE (B,C,D)	COMPLETE (NOTE D)

(9546ONH/ccc)

SYSTEM: CONTAINMENT ISOLATION

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT
TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	N/A	1	A. ASCO SOLENOID VALVE	INSTALLED DURING PRIOR OUTAGE	COMPLETE (NOTE K)

SYSTEM: SAFETY INJECTION (CONTAINMENT WATER LEVEL)

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	LT-801 A&B&C&D&E LT-802 A&B&C&D&E	16 17	A. GEMS DELAVAL LEVEL TRANSMITTERS CONTAINMENT SUMP WATER LEVEL	REPLACEMENT DATE 3/31/85	(NOTE L)
	N/A	27	B. ROCKBESTOS INSTRUMENTATION	INSTALLED DURING PRIOR PRIOR OUTAGE	COMPLETE
2	N/A	24	A. CROUSE-HINDS ELECTRICAL PENETRATION	ORIGINAL EQUIPMENT (A) INSTALLED DURING PRIOR OUTAGE (B,C,D)	COMPLETE (NOTE D)
	N/A	30	B. CABLE SPLICE - RAYCHEM HEAT SHRINK		
	N/A	31	C. AMP TERMINAL		
			D. CABLE SPLICE - SCOTCH #70 SILICON RUBBER		

SYSTEM: EMERGENCY POWER SUPPLY REQUIREMENTS FOR THE PRESSURIZER HEATERS, POWER OPERATED RELIEF AND BLOCK VALVES, AND PRESSURIZER LEVEL INDICATORS IN PWR'S (NUREG-0578, PARA. 2.1.1)

MASTER LIST OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY TO BE ENVIRONMENTALLY QUALIFIED
H. B. ROBINSON S.E. PLANT UNIT 2

ITEM NO.	PLANT I.D. NO.	NRC-TER NO.	DESCRIPTION	EXPECTED OR ACTUAL INSTALLATION/OPERATION	ENVIRONMENTAL QUALIFICATION
1	N/A	29	A. SAMUEL MOORE INSTRUMENTATION CABLE	ORIGINAL EQUIPMENT	COMPLETE (NOTE N)

(9546ONH/ccc)

NOTES TO TABLE 3

A. Limitorque Valve Motor Operators Located Inside Containment (with Class B Motors)

The Limitorque Valve Motor Operators, with Class B motor insulation, are located inside containment. This equipment was designated as "equipment qualification not established" by the HBR2 SER dated January 5, 1983. The SER deficiencies included the areas of adequate documentation, adequate evaluation of aging degradation, establishment of qualified life or replacement schedule, establishment of a program to identify aging degradation, criteria regarding aging simulation satisfied, radiation criteria satisfied, and test sequence satisfied. Qualification documentation does not exist that addresses and resolves each of the deficiencies noted in the SER. Therefore, the subject equipment shall be replaced. The Kerite power cables used with these motors were designated as qualified by the SER. The motor-to-lead splices were designated as "qualification not established" by the SER. Additional documentation to address the deficiency (similarity) is now in the EQ File. The lubricants and greases are those recommended by the manufacturer. These items are considered qualified.

B. Limitorque Valve Motor Operators Located Outside Containment (Radiation Only)

The Limitorque valve motor operators are located outside containment where the only potential harsh accident environmental parameter is gamma radiation (< 2.0E6 TID). The equipment was designated as "equipment qualification not established" by the SER dated January 5, 1983. Documentation now exists in the HBR2 EQ File maintained by CP&L to document the environmental qualification of this equipment for its specified safety function and its location specific service conditions throughout the installed life of the equipment. This documentation was discussed with the NRC staff at a meeting held on January 18, 1984. We believe that the documentation addresses and resolves each of the deficiencies noted in the SER regarding this equipment. The SER deficiencies discussed at the meeting included the areas of adequate documentation, adequate similarity, adequate evaluation of aging degradation, establishment of a program to identify aging degradation. The Kerite cables, motor-to-lead splices, and lubricants and greases used with these motors are considered qualified (see Note A). Therefore, the EQ documentation maintained by CP&L for this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

C. Madison Level Switches

These switches are no longer in use as the primary source of sump level data. Therefore, they do not need to be qualified.

D. Crouse-Hinds Electrical Penetration Assemblies

These Crouse-Hinds penetrations were designated as "qualification documentation not made available for review" by the HBR2 SER dated January 5, 1983. Documentation exists in the HBR2 EQ File maintained by CP&L to document the environmental qualification of this equipment for its specified safety function and its location-specific service conditions throughout the installed life of the equipment. Copies of this documentation were forwarded to the NRC for review on May 20, 1983 as was discussed with the NRC staff at a meeting held on January 18, 1984. The Raychem cable splices and Amp connectors used with these penetrations were designated as "qualified except for qualified life" and "qualification not established" by the SER. Additional documentation to address the deficiencies is now in the EQ File. These items are considered qualified. We believe that this documentation meets the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of the NRC Rule 10 CFR 50.49.

E. Rosemount 1153 Series "A" Transmitters

These Rosemount transmitters are located inside and outside containment. These equipment items were designated as "not qualified" by the HBR2 SER dated January 5, 1983. Documentation now exists in the HBR2 EQ File maintained by CP&L to document the environmental qualification of this equipment for its specified safety function and its location-specific service conditions throughout the installed life of the equipment. This documentation, including Rosemount test reports, was discussed with the NRC staff at a meeting held on January 18, 1984. We believe this documentation addresses and resolves each of the deficiencies noted in the SER on this equipment. The SER deficiencies discussed at the meeting included the areas of aging, qualified life, test sequence, margins, criteria concerning test failure, and submergence. The Anaconda-Continental cable used with these items was designated as "qualification not established" by the SER. The Rockbestos cable was designated as qualified. Documentation is now in the EQ File to show these items to be qualified. Therefore, the documentation maintained by CP&L for this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

F. Westinghouse Motor Located Outside Containment

These Westinghouse motors and the associated motor-to-lead splices, power cables, and motor and pump bearing/lubricant systems are located outside containment where the only potential harsh accident environmental parameter is gamma radiation (< 2.0 E6 rads). These equipment items were designated as "qualification not established" by the SER dated January 5, 1983. Documentation now exists in the HBR2 EQ File maintained by CP&L to document the environmental qualification of this equipment for its specified safety function and its location-specific service conditions throughout the installed life of the equipment. This documentation, including Westinghouse test reports, was discussed with the NRC Staff at a meeting held on January 18, 1984. We believe that the documentation addresses and resolves each of the deficiencies noted in the SER regarding

these motors and their associated motor-to-lead splices and bearing/lubricant systems. The SER deficiencies discussed at the meeting for each equipment item included the areas of adequate documentation, adequate similarity, adequate evaluation of aging degradation, establishment of qualified life or replacement schedule, establishment of a program to identify aging degradation, satisfying aging simulation criteria, satisfying peak temperature criteria, and/or satisfying radiation criteria. The motor-to-lead splices, Kerite cables, and lubricants and greases are considered qualified (see Note A). Therefore, the EQ documentation maintained by CP&L for this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

G. Rosemount Resistance Temperature Detectors Located Inside Containment

These Rosemount RTDs and associated cables are located inside containment and are required to operate for a short time ($\leq$ 2 hours) after an MSLB. These equipment items were designated as "qualification not established" by the HBR2 SER dated January 5, 1983. Documentation now exists in the HBR2 EQ file to document the environmental qualification of this equipment for its specified safety function and its location-specific service conditions throughout the installed life of the equipment. This documentation, including Westinghouse test reports, was discussed with the NRC Staff at a meeting held on January 18, 1984. We believe that the CP&L documentation addresses and resolves each of the deficiencies noted in the SER regarding these RTDs. The SER deficiencies discussed at the meeting for this equipment included the areas of adequate documentation, aging, qualified life, temperature and pressure profile adequacy, spray criteria, and instrument accuracy. The Anaconda-continental cable used with these RTDs is considered qualified (see Note E). Therefore, the EQ documentation maintained by CP&L for this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

H. ASCO Solenoid Valves Located Inside Containment

These solenoid valves were designated as "qualified." Documentation presently exists in the HBR2 EQ File which shows these valves to be environmentally qualified for their specified safety function and location specific service conditions. The Kerite control cable is also considered qualified (see Note A).

I. Westinghouse Fan Cooler Motors Located Inside Containment

These Westinghouse containment emergency fan cooler motors and associated motor-to-lead splices, power cables, penetration splices, electrical penetration splices, and motor and fan bearing/lubricant systems are located inside containment at HBR2. These motors and associated motor-to-lead splices and lubricants were designated as "qualification not established" by the HBR2 SER dated January 5, 1983. Documentation now exists in the HBR2 EQ File maintained by CP&L to document the environmental qualification of this equipment for its specified safety function and its location-specific service conditions throughout the

installed life of the equipment. This documentation, including Westinghouse test reports, was discussed with the NRC Staff at a meeting held on January 18, 1984. We believe that the documentation addresses and resolves each of the deficiencies noted in the SER regarding these motors and their associated motor-to-lead splices and bearing/lubricant systems. The SER deficiencies discussed at the meeting included the areas of adequate documentation, adequate similarity, adequate evaluation of aging degradation, establishment of qualified life or replacement schedule, satisfying aging simulation criteria, satisfying peak temperature criteria, satisfying radiation criteria, and/or addressing Beta-emitter plateout. The motor-to-lead splices, Kerite cables, and lubricants and greases are considered qualified (see Note A). Therefore, the EQ documentation maintained by CP&L for this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines for original plant equipment, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

J. B&W Valve Monitor System Located Inside Containment

B&W Valve Monitor System and its associated splices, cables, and electrical penetration assemblies, are located inside containment to the Safety Relief Valves at HBR2, and were installed to meet the requirements of NUREG-0737, Item II.D.3.1, "Direct Indication of Relief and Safety Valve Position." This equipment was designated as "qualification pending modification" by the HBR2 SER dated January 5, 1983. As discussed with the NRC Staff at the January 18, 1984 meeting, documentation available in the HBR2 EQ File indicates that pending successful test completion, the environmental qualification of these components for their specified design function and location-specific service conditions throughout their installed life will be able to be demonstrated. The EQ documentation for this equipment is expected to be completed by the date noted in the table to meet the environmental qualification requirements of NUREG-0588 (Category I), as clarified by Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

K. ASCO Solenoid Valves Located Outside Containment (Radiation Only)

These ASCO Solenoid valves are located outside containment where the only harsh accident environmental parameter is gamma radiation. These equipment items were designated as "qualification not established" by the HBR2 SER dated January 5, 1983. Documentation now exists in the HBR2 EQ file maintained by CP&L to document the environmental qualification of this equipment for its specified function and its location-specific service conditions throughout its installed life. We believe that the CP&L documentation addresses and resolves each of the deficiencies noted in the SER regarding these valves. These SER deficiencies included adequate documentation and satisfying radiation criteria. The EQ documentation maintained by CP&L for this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

L. Gems Delaval Water Level Transmitter for Containment Sump

The Containment Sump water level transmitters are being replaced using Gems Delaval type SM-54854 transmitters. The transmitters were designated as "not qualified" by the HBR2 SER dated January 5, 1983. These transmitters have been successfully environmentally tested by Bechtel Power Corporation for SNUPPS and by Gems Delaval. The results of those qualification test programs are documented in Wyle Laboratories Test Reort Nos. 45700-1 and 2, respectively. As discussed with the NRC Staff at the January 18, 1984 meeting, the test results indicate that the environmental qualification of the new Gems Delaval transmitters at HBR2 will be able to be demonstrated by the use of these test reports. The environmental qualification of the associated electrical conductor seal assemblies, instrumentation cables, splices and electrical penetration assemblies for these transmitters will also be able to be demonstrated by documentation available in the HBR2 EQ File. The EQ documentation for these transmitters and associated components is expected to be completed by the date noted in the table. Based on the information provided to the NRC Staff in response to the SER concerning these transmitters, we believe that the continued safe operation of HBR2 is justified until the detailed qualification documentation can be completed for each specific transmitter application and location. The documentation will be maintained in the HBR2 EQ File to meet the environmental qualification requirements of NUREG-0588 (Category I), as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

M. Limitorque Valve Motor Operators Located Inside Containment (With Brakes)

These Limitorque valve motor operators and the associated power and control cables, motor-to-lead splices, electrical penetration splices, electrical penetration assemblies, main gear case lubricant, and geared limit switch lubricant are located inside containment and were designated as "qualification not established." Documentation presently exists in the HBR2 EQ File maintained by CP&L to document the environmental qualification of this equipment (less motor brakes) for its specified safety function and its location-specific service conditions. The motor-to-lead splices, Kerite cables, and lubricants and greases are considered qualified (see Note A). These actuators are to be replaced with the new Model SB actuators which do not require electric brakes. Documentation is available to show the environmental qualification of this equipment (SB actuators) for the proposed safety function and location-specific service conditions. We believe the EQ documentation for this equipment (SB operators) shows it to meet the environmental qualification requirements of NUREG-0588 (Cat. I) as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC Rule 10 CFR 50.49.

N. Samuel Moore Thermocouple Extension Cable Located Inside Containment

These cables are located inside containment and were designated "qualified except for qualified life" by the HBR2 SER dated January 5, 1983. Documentation now exists in the HBR2 EQ File to document the environmental qualification of this equipment and establish a qualified life. Based on this EQ documentation maintained by CP&L, this equipment is judged to meet the environmental qualification requirements of the DOR Guidelines, as clarified by NRC Generic Letter 82-09, in accordance with the provisions of NRC rule 10 CFR 50.49.

SECTION III

COMPLIANCE WITH 10 CFR 50.49

AT H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2

Based on Paragraph (b)(1) of 10 CFR 50.49, definition of safety-related electrical equipment (equipment required to remain functional during or following design-basis Loss-of-Coolant Accident or High Energy Line Break), a review of prior submitted equipment master lists required to meet IE Bulletin 79-01B was performed. These lists were amended during the various revisions submitted to NRC as required by clarification letters and NRC requirements. The Master List submitted in Revision 3 of HBR2 IE Bulletin 79-01B (90 day report), dated February 1, 1981, represents the latest list. The original compilation and current review was based on the HBR2 Final Safety Analysis Report (FSAR), Technical Specifications, Operating Procedures, P&IDs and Control Wiring Diagrams.

Paragraph (b)(2) of 10 CFR 50.49 requires that licensees identify "Nonsafety-related electrical equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions . . ." A list of electrical equipment important to safety was compiled and submitted to NRC within Section 2.4 of the HBR2 response to 10 CFR 50.49 dated May 20, 1983. This list was developed by initially reviewing Master List electrical equipment submitted in CP&L's 90-day response, and subsequent revisions to IE Bulletin 79-01B, to determine the safety systems and equipment involved in order to identify any additional equipment which was needed to meet paragraph (b)(2). Specifically, control wiring diagrams of the Master List safety-related electrical equipment were reviewed to identify any auxiliary items electrically connected into control or power circuits of the safety-related equipment, whose failure due to postulated accident conditions could prevent the required operation of the safety-related equipment. Secondly, the safety-related systems were reviewed to identify any mechanically connected auxiliary systems with electrical components which are necessary for the required operation of safety-related equipment. This included the review of P&IDs, FSAR, System Descriptions, and manufacturers technical/maintenance manuals. Finally, nonsafety-related electrical equipment physically located near safety-related equipment was reviewed for interference with safety functions during postulated accidents.

The submitted List of Electrical Equipment Important to Safety represents a summation of the above efforts which indicated that no additional electrical equipment other than those presented in our Master List submitted on February 1, 1981 need be added to the Master List.

Carolina Power & Light Company believes that the above efforts meet the intent of paragraph (b)(2) of 10 CFR 50.49 for HBR2. It is important to note that CP&L considers the compilation of the list of electrical equipment important to safety an on-going effort. Changes will occur as plant modifications are performed, design updates are included, and safety improvements are mandated. Therefore, this listing will be periodically reviewed and modified. Carolina Power & Light Company will maintain these revisions with its equipment qualification file.

Paragraph (b)(3) of 10 CFR 50.49 refers to equipment related to R.G. 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." Carolina Power & Light Company is committed to the schedule as presented within our April 15, 1983 and August 24, 1983 responses to NUREG-0737 requirements. This includes identification of Type List equipment and

schedule for completion of their installation. As the equipment is identified and approved, those which require environmental qualification will be added to the (b)(2) list. At that time, it will be determined if JCOs are needed or the presence of sufficient qualification documentation in file will be stated.

The environmental qualification of master list electrical equipment established by this submittal will be furthered by the following programs. During the combined Refueling/Steam Generator outage started January 26, 1984, a walkdown will be performed to: verify valid equipment installation, collect nameplate data for record/file purposes, and determine any further submergence effects (Reference: Section I, Generic Issues - submergence). Additionally, equipment replacement will take place in order to provide documented qualified electrical equipment. The following are scheduled to be replaced: motor actuators with brakes in containment (V 744 A&B); motor actuators in containment with Class B motor insulation (V 866A&B); and Containment Water Level Monitor Transmitters (LT-801, A, B, C, D and LT 802 A, B, C, & D). During these outages, a spare parts listing will be compiled of items/components/assemblies that must be provided and maintained in appropriate qualification level in order to be used for operational maintenance or failure replacement of qualified equipment.

A continuing program will be the replacement of motor actuator lubricants to provide all actuators with the currently recommended Limitorque lubricant (Texaco Nebula EPO). To maintain the environmental qualification of master list equipment, existing maintenance programs will be augmented to implement surveillance, preventative maintenance and repair of environmentally qualified electrical equipment. By March 31, 1985 the system will be in place at HBR2 to track the on-going qualification maintenance of all electrical equipment important to safety.