SAFETY EVALUATION REPORT BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

EQUIPMENT QUALIFICATION BRANCH

FOR BOSTON EDISON COMPANY

PILGRIM UNIT 1

DOCKET NO. 50-293

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ENVIRONMENTAL QUALIFICATION OF SAFETY-RELATED ELECTRICAL EQUIPMENT

1 INTRODUCTION

General Design Criteria 1 and 4 specify that safety-related electrical equipment in nuclear facilities must be capable of performing its safety-related function under environmental conditions associated with all normal, abnormal, and accident plant operation. In order to ensure compliance with the criteria, the NRC staff required all licensees of operating reactors to submit a reevaluation of the qualification of safety-related electrical equipment which may be exposed to a harsh environment.

2 BACKGROUND

On February 8, 1979, the NRC Office of Inspection and Enforcement (IE) issued to all licensees of operating plants (except those included in the systematic evaluation program (SEP)) IE Bulletin IEB 79-01, "Environmental Qualification of Class IE Equipment." This bulletin, together with IE Circular 78-08 (issued on May 31, 1978), required the licensees to perform reviews to assess the adequacy of their environmental qualification programs.

Subsequently, Commission Memorandum and Order CLI-80-21 (issued on May 23, 1980) states that the DOR guidelines and portions of NUREG-0588 (which were issued on January 14, 1980, as enclosures 4 and 5 to IEB-79-01B) form the requirements that licensees must meet regarding environmental qualification of safety-related electrical equipment in order to satisfy those aspects of 10 CFR 50, Appendix A, General Design Criterion (GDC)-4. This order also requires the staff to complete safety evaluation reports (SERs) for all operating plants by February 1, 1981. In addition, this order requires that the licensees have qualified safety-related equipment installed in their plants by June 30, 1982.

Supplements to IEB 79-01B were issued for further clarification and definition of the staff's needs. These supplements were issued on February 29, September 30, and October 24, 1980.

In addition, the staff issued orders dated August 29, 1980 (amended in September 1980) and October 24, 1980 to all licensees. The August order required that the licensees provide a report, by November 1, 1980, documenting the qualification of safety-related electrical equipment. The October order required the establishment of a central file location for the maintenance of all equipment-qualification records. The central file was mandated to be established by December 1, 1980. The order also required that all safety-related electrical equipment be qualified by June 30, 1982. In

response, the licensee submitted information through letters dated March 12, April 18 and 22, July 22, and October 29, 1980.

2.1 Purpose

The purpose of this SER is to identify safety-related equipment whose qualification program does not provide sufficient assurance that the equipment is capable of performing the design function in hostile environments. The staff position relating to any identified deficiencies is provided in this report.

2.2 Scope

The scope of this report is limited to an evaluation of the equipment which must function in order to mitigate the consequences of a loss-of-coolant accident (LOCA) or a high-energy-line-break (HELB) accident, inside or outside containment, while subjected to the hostile environments associated with these accidents.

3 STAFF EVALUATION

The staff evaluation of the licensee's response included an onsite inspection of selected Class IE equipment and an examination of the licensee's report for completeness and acceptability. The criteria described in the DOR guidelines and in NUREG-0588, in part, were used as a basis for the staff evaluation of the adequacy of the licensee's qualification program.

The NRC Office of Inspection and Enforcement performed (1) a preliminary evaluation of the licensee's response, documented in a technical evaluation report (TER) and (2) an onsite verification inspection (April 9 and 10, 1980) of selected safety-related electrical equipment. The automatic depressurization system (ADS) was inspected to verify proper installation of equipment, overall interface integrity, and manufacturers' nameplate data. The manufacturer's name and model number from the nameplate data were compared to information given in the Component Evaluation Work Sheets (CES) of the licensee's report. The site inspection is documented in report IE 50-293/80-24. No deficiencies were noted. For this review, the document referenced above has been factored into the overall staff evaluation.

3.1 Completeness of Safety-Related Equipment

In accordance with IEB 79-01B, the licensee was directed to (1) establish a list of systems and equipment that are required to mitigate a LOCA and an HELB and (2) identify components needed to perform the function of safety-related display information, post-accident sampling and monitoring, and radiation monitoring.

The staff developed a generic master list based upon a review of plant safety analyses and emergency procedures. The instrumentation selected includes parameters to monitor overall plant performance as well as to monitor the performance of the systems on the list. The systems list was established on the basis of the functions that must be performed for accident mitigation (without regard to location of equipment relative to hostile environments).

The list of safety-related systems provided by the licensee was reviewed against the staff-developed master list.

Based upon information in the licensee's submittal, the staff has concluded that the information on safety-related systems included in the licensee's submittals is insufficient to verify that those systems are all the systems required to achieve or support: (1) emergency reactor shutdown, (2) containment isolation, (3) reactor core cooling, (4) containment heat removal, (5) core residual heat removal, and (6) prevention of significant release of radioactive material to the environment. The staff acknowledges the licensee's effort to include only those safety-related systems located in a potentially harsh environment. However, this review requires the listing of all safety-related systems, both inside and outside potentially harsh environments. The list of safety-related systems submitted by the licensee is included in Appendix D.

Display instrumentation which provides information for the reactor operators to aid them in the safe handling of the plant was not specifically identified by the licensee. A complete list of all display instrumentation mentioned in the LOCA and HELB emergency procedures must be provided. Equipment qualification information in the form of summary sheets should be provided for all components of the display instrumentation exposed to harsh environments. Instrumentation which is not considered to be safety related but which is mentioned in the emergency procedure should appear on the list. For these instruments, (1) justification should be provided for not considering the instrument safety related and (2) assurance should be provided that its subsequent failure will not mislead the operator or adversely affect the mitigation of the consequences of the accident. The environmental qualification of post-accident sampling and monitoring and radiation monitoring equipment is closely related to the review of the TMI Lessons-Learned modifications and will be performed in conjunction with that review.

The licensee identified 536 items of equipment which were assessed by the staff.

3.2 Service Conditions

Commission Memorandum and Order CLI-80-21 requires that the DOR guidelines and the "For Comment" NUREG-0588 are to be used as the criteria for establishing the adequacy of the safety-related electrical equipment environmental qualification program. These documents provide the option of establishing a bounding pressure and temperature condition based on plant-specific analysis identified in the licensee's Final Safety Analysis Report (FSAR) or based on generic profiles using the methods identified in these documents.

On this basis, the staff has assumed, unless otherwise noted, that the analysis for developing the environmental envelopes for Pilgrim Unit 1, relative to the temperature, pressure, and the containment spray caustics, has been performed in accordance with the requirements stated above. The staff has reviewed the qualification documentation to ensure that the qualification specifications envelope the conditions established by the licensee.

3.3 Temperature, Pressure, and Humidity Conditions Inside Containment

The licensee has provided the results of accident analyses as follows:

	Max Temp (°F)	Max Press (psig)	Humidity (%)
LOCA	290	44	100
MSLB	320	24	100

The staff has concluded that the minimum temperature profile for equipment qualification purposes should include a margin to account for analytical uncertainties in the calculated temperature profiles for postulated accidents. A margin of 20°F above saturation is considered to be appropriate for either a postulated LOCA or MSLB, whichever is controlling, as to potential adverse environmental effects on equipment.

The licensee's specified temperature profile for qualification purposes enveloped both the MSLB and LOCA temperature profiles and includes a margin at least as large as would result from the staff's recommendation. Therefore, we conclude that the specified temperature profile is acceptable.

3.4 Temperature, Pressure, and Humidity Conditions Outside Containment

The licensee has provided the temperature, pressure, humidity, and applicable environment associated with an HELB outside containment. The following areas outside containment have been addressed:

(1) RHR and core spray pumps room "A"
(2) RHR and core spray pumps room "B"
(3) HPCI pump panel and valve room
(4) RCIC pump room
(5) RCIC pump room mezzanine
(6) CRD pump room mezzanine
(7) CRD modules area - east
(8) CRD modules area - west
(9) RHR piping room
(10) Drywell access room
(11) RCIC piping room
(12) RHR/HPCI piping room
(13) Open area - east half
(14) Open area - west half
(15) Fuel pool heat exchanger area
(16) Open area - north half
(17) Standby liquid control area
(18) Clothing change and storage area
(19) Standby gas treatment filter rooms
(20) Steam tunnel between turbine building and drywell
(21) Compartment surrounding torus

The staff has verified that the parameters identified by the licensee for the MSLB are acceptable.

3.5 Submergence

The licensee has stated that Pilgrim Unit 1 is a Mark I BWR with the potential area for submerged equipment being the interior of the torus. No safety-related electrical equipment has been identified in or below this area.

It is not clear from the information submitted that submergence of safety-related electrical equipment outside of containment was addressed. The licensee should address the area more specifically in the 90-day response and upgrade the CES as appropriate.

3.6 Chemical Spray

The licensee has not identified containment spray as a safety-related system, and credit has not been taken in the analysis. The system is manually operated and uses demineralized water. Because spray is available and could be used, any equipment upon which it impinges must be qualified for the spray parameter. The licensee should provide additional information to resolve this concern.

3.7 Aging

Section 7 of the DOR guidelines does not require a qualified life to be established for all safety-related electrical equipment. However, the following actions are required:

(1) Make a detailed comparison of existing equipment and the materials identified in Appendix C of the DOR guidelines. The first supplement to IEB-79-01B requires licensees to utilize the table in Appendix C and identify any additional materials as the result of their effort.

(2) Establish an ongoing program to review surveillance and maintenance records to identify potential age-related degradations.

(3) Establish component maintenance and replacement schedules which include considerations of aging characteristics of the installed components.

For this review, the staff requires that the licensee submit supplemental information to identify and verify the degree of conformance to the above requirements. The response should include all the equipment identified as required to maintain functional operability in harsh environments.

The staff will review the licensee's response when it is submitted and discuss its evaluation in a supplemental report.

3.8 Radiation (Inside and Outside Containment)

The licensee has provided values for the radiation levels postulated to exist following a LOCA. The application and methodology employed to determine these values were presented to the licensee as part of the NRC staff criteria contained in the DOR guidelines, in NUREG-0588, and in the guidance provided in

IEB-79-01B, Supplement 2. Therefore, for this review, the staff has assumed that, unless otherwise noted, the values provided have been determined in accordance with the prescribed criteria. The staff review determined that the values to which equipment was qualified enveloped the requirements identified by the licensee.

The radiation value required by the licensee inside containment is an integrated dose of 1.8×10^7 rads. The radiation service condition provided by the licensee is lower than that given in the DOR guidelines for gamma and beta radiation. The licensee is requested to either provide justification for using the lower service condition or use the service condition provided in the DOR guidelines for both gamma and beta radiation. If the former option is chosen, the analysis--including the basis, assumptions, and a sample calculation--shall be provided.

A required value outside containment of 6.2×10^5 rads has been used by the licensee to specify limiting radiation levels within the RHR and core spray pump room of the reactor building. This value does not appear to consider the radiation levels influenced by the source term methodology associated with post-LOCA recirculation fluid lines. The licensee must correct this along with the associated equipment summary sheets.

4 QUALIFICATION OF EQUIPMENT

The following subsections present the staff's assessment, based on the licensee's submittal, of the qualification status of safety-related electrical equipment.

The staff has separated the safety-related equipment into three categories: (1) equipment requiring immediate corrective action, (2) equipment requiring additional qualification information and/or corrective action, and (3) equipment considered acceptable if the staff's concern identified in Section 3.7 is satisfactorily resolved.

In its assessment of the licensee's submittal, the NRC staff did not review the methodology employed to determine the values established by the licensee. However, in reviewing the data sheets, the staff made a determination as to the stated conditions presented by the licensee. Additionally, the staff has not completed its review of supporting documentation referenced by the licensee (for example, test reports). It is expected that when the review of test reports is complete, the environmental qualification data bank established by the staff will provide the means to cross reference each supporting document to the referencing licensee.

If supporting documents are found to be unacceptable, the licensee will be required to take additional corrective actions to either establish qualification or replace the item(s) of concern. This effort will begin in early 1981.

An appendix for each subsection of this report provides a list of equipment for which additional information and/or corrective action is required. Where appropriate, a reference is provided in the appendices to identify deficiencies. It should be noted, as in the Commission Memorandum and Order, that the deficiencies identified do not necessarily mean that equipment is unqualified. However, they are cause for concern and may require further case-by-case evaluation.

4.1 Equipment Requiring Immediate Corrective Action

Appendix A identifies equipment (if any) in this category. The licensee was asked to review the facility's safety-related electrical equipment. The licensee's review of this equipment has not identified any equipment requiring immediate corrective action; therefore, no licensee event reports (LERs) were submitted. In addition, in this review, the staff has not identified any safety-related electrical equipment which is not able to perform its intended safety function during the time in which it must operate.

4.2 Equipment Requiring Additional Information and/or Corrective Action

Appendix B identifies equipment in this category, including a tabulation of deficiencies. The deficiencies are noted by a letter relating to the legend (identified below), indicating that the information provided is not sufficient for the qualification parameter or condition.

Legend

R - radiation
T - temperature
QT - qualification time
RT - required time
P - pressure
H - humidity
CS - chemical spray
A - material-aging evaluation; replacement schedule; ongoing equipment surveillance
S - submergence
M - margin
I - HELB evaluation outside containment not completed
QM - qualification method
RPN - equipment relocation or replacement; adequate schedule not provided
EXN - exempted equipment justification inadequate
SEN - separate-effects qualification justification inadequate
QI - qualification information being developed
RPS - equipment relocation or replacement schedule provided

As noted in Section 4, these deficiencies do not necessarily mean that the equipment is unqualified. However, the deficiencies are cause for concern and require further case-by-case evaluation. The staff has determined that an acceptable basis to exempt equipment from qualification, in whole or part, can be established provided the following can be established and verified by the licensee:

(1) Equipment does not perform essential safety functions in the harsh environment, and equipment failure in the harsh environment will not impact safety-related functions or mislead an operator.

(2a) Equipment performs its function before its exposure to the harsh environment, and the adequacy for the time margin provided is adequately justified, and

(2b) Subsequent failure of the equipment as a result of the harsh environment does not degrade other safety functions or mislead the operator.

(3) The safety-related function can be accomplished by some other designated equipment that has been adequately qualified and satisfies the single-failure criterion.

(4) Equipment will not be subjected to a harsh environment as a result of the postulated accident.

The licensee is, therefore, required to supplement the information presented by providing resolutions to the deficiencies identified; these resolutions should include a description of the corrective action, schedules for its completion (as applicable), and so forth. The staff will review the licensee's response, when it is submitted, and discuss the resolution in a supplemental report.

It should be noted that in cases where testing is being conducted, a condition may arise which results in a determination by the licensee that the equipment does not satisfy the qualification test requirements. For that equipment, the licensee will be required to provide the proposed corrective action, on a timely basis, to ensure that qualification can be established by June 30, 1982.

4.3 Equipment Considered Acceptable or Conditionally Acceptable

Based on the staff review of the licensee's submittal, the staff identified the equipment in Appendix C as (1) acceptable on the basis that the qualification program adequately enveloped the specific environmental plant parameters, or (2) conditionally acceptable subject to the satisfactory resolution of the staff concern identified in Section 3.7.

For the equipment identified as conditionally acceptable, the staff determined that the licensee did not clearly

(1) state that an equipment material evaluation was conducted to ensure that no known materials susceptible to degradation because of aging have been used,

(2) establish an ongoing program to review the plant surveillance and maintenance records in order to identify equipment degradation which may be age related, and/or

(3) propose a maintenance program and replacement schedule for equipment identified in item 1 or equipment that is qualified for less than the life of the plant.

The licensee is, therefore, required to supplement the information presented for equipment in this category before full acceptance of this equipment can be established. The staff will review the licensee's response when it is submitted and discuss the resolution in a supplemental report.

5 DEFERRED REQUIREMENTS

IEB 79-01B, Supplement 3 has relaxed the time constraints for the submission of the information associated with cold shutdown equipment and TMI lessons-learned modifications. The staff has required that this information be provided

by February 1, 1981. The staff will provide a supplemental safety evaluation addressing these concerns.

6 CONCLUSIONS

The staff has determined that the licensee's listing of safety-related systems and associated electrical equipment whose ability to function in a harsh environment following an accident and is required to mitigate a LOCA or HELB is incomplete. The staff has also determined that the environmental service conditions to be met by the electrical equipment in the harsh accident environment are unacceptable. Outstanding information identified in Section 3 should be provided within 90 days of receipt of this SER.

The staff has determined that many items of safety-related electrical equipment identified by the licensee for this review do not have adequate documentation to ensure t they are capable of withstanding the harsh environmental service conditions. This review was based on a comparison of the qualification values with the specified environmental values required by the design, which were provided in the licensee's summary sheets.

Subsection 4.2 identified deficiencies that must be resolved to establish the qualification of the equipment; the staff requires that the information lacking in this category be provided within 90 days of receipt of this SER. Within this period, the licensee should either provide documentation of the missing qualification information which demonstrates that such equipment meets the DOR guidelines or NUGEG-0588 or commit to a corrective action (requalification, replacement, relocation, and so forth) consistent with the requirements to establish qualification by June 30, 1982. If the latter option is chosen, the licensee must provide justification for operation until such corrective action is complete.

Subsection 4.3 identified acceptance and conditional acceptance based on noted deficiencies. Where additional information is required, the licensee should respond within 90 days of receipt of this SER by providing assurance that these concerns will be satisfactorily resolved by June 30, 1982.

The staff issued to the licensee Sections 3 and 4 of this report and requested, under the provisions of 10 CFR 50.54(f), that the licensee review the deficiencies enumerated and the ramifications thereof to determine whether safe operation of the facility would be impacted in consideration of the deficiencies. The licensee has completed a preliminary review of the identified deficiencies and has determined that, after due consideration of the deficiencies and their ramifications, continued safe operation would not be adversely affected.

Based on these considerations, the staff concludes that conformance with the above requirements and satisfactory completion of the corrective actions by June 30, 1982 will ensure compliance with the Commission Memorandum and Order of May 23, 1980. The staff concludes that:

(1) no outstanding items which would require immediate corrective action to assure safety of plant operation have been identified

(2) some of the items found deficient have been or are being replaced or relocated, thus improving the facility's capability to function following a LOCA or HELB

(3) the harsh environmental conditions for which this equipment must be qualified result from low-probability events; events which might reasonably be anticipated during this very limited period would lead to less demanding service conditions for this equipment.

APPENDIX A

Equipment Requiring
Immediate Corrective Action
(Category 4.1)

Equipment Description	Manufacturer	Component No.

No equipment in this category

APPENDIX B

Equipment Requiring Additional Information
and/or Corrective Action
(Category 4.2)

LEGEND:

R - Radiation
T - Temperature
QT - Qualification time
RT - Required time
P - Pressure
H - Humidity
CS - Chemical spray
A - Material aging evaluation, replacement schedule, ongoing equipment surveillance
S - Submergence
M - Margin
I - HELB evaluation outside containment not completed
QM - Qualification method
RPN - Equipment relocation or replacement, adequate schedule not provided
EXN - Exempted equipment justification inadequate
SEN - Separate effects qualification justification inadequate
QI - Qualification information being developed
RPS - Equipment relocation or replacement schedule provided

Equipment Description	Manufacturer	Component No.	Deficiency
600 V Power and Control Cable	Okonite	112	R, H, A, M, QT, RT
600 V Power and Control Cable	Okonite	212	R, H, A, M, QT, RT
600 V Power and Control Cable	Okonite	312	R, H, A, M, QT, RT
600 V Power and Control Cable	Okonite	412	R, H, A, M, QT, RT
600 V Power and Control Cable	Okonite	512	R, H, A, M, QT, RT
600 V Power and Control Cable	Okonite	712	R, H, A, M, QT, RT

APPENDIX B (Continued)

Equipment Description	Manufacturer	Component No.	Deficiency
600 V Power and Control Cable	Kerite	112	A, RT, QT, QI
600 V Power and Control Cable	Kerite	212	A, RT, QT, QI
600 V Power and Control Cable	Kerite	312	A, RT, QT, QI
600 V Power and Control Cable	Kerite	412	A, RT, QT, QI
600 V Power and Control Cable	Kerite	512	A, RT, QT, QI
600 V Power and Control Cable	Kerite	712	A, RT, QT, QI
600 V Power and Control Cable	Kerite	912	A, RT, QT, QI
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco, (SOV)/(LIM SW)	A0203-1A	A, R, QT, RT, QM, SEN, QI
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco, (SOV)/(LIM SW)	A0203-1B	A, R, QT, RT, QM, SEN, QI
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco, (SOV)/(LIM SW)	A0203-1C	A, R, QT, RT, QM, SEN, QI
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco, (SOV)/(LIM SW)	A0203-1D	A, R, QT, RT, QM, SEN, QI
Globe Valve Air Operator Limit Switch	Namco	A0220-44	A, R, QT, RT, QI
600 V Power and Control Cable	Kerite	B6 KERITE	A, RT, QT, QI
600 V Power and Control Cable	Kerite	B7 KERITE	A, RT, QT, QI

Equipment Description	Manufacturer	Component No.	Deficiency
Limit Switch Junction Box	Buchanan/ Hoffman	J208	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J209	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J210	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J211	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J212	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J213	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J214	A, RT, QT
Limit Switch Junction Box	Buchanan/ Hoffman	J215	A, RT, QT
Junction Box and Terminal Block	Buchanan	J216	A, RT, QT, QM
Junction Box and Terminal Block	Buchanan	J43	A, RT, QT, QM
Junction Box and Terminal Block	Buchanan	J44	A, RT, QT, QM
Junction Box and Terminal Block	Buchanan	J55	A, RT, QT, QM
Junction Box and Terminal Block	Buchanan	J56	A, RT, QT, QM
Motor Operator	Limitorque	M01001-50	A, RT, QT
Motor Operator	Limitorque	M01001-63	A, RT, QT
Motor Operator	Limitorque	M01201-63	A, RT, QT
Motor Operator	Limitorque	M01201-2	A, RT, QT

APPENDIX B (Continued)

Equipment Description	Manufacturer	Component No.	Deficiency
Motor Operator	Limitorque	M01301-16	A, RT, QT
Motor Operator	Limitorque	M02301-4	A, RT, QT
Motor Operator	Limitorque	M0261-1	A, RT, QT
Motor Operator	Limitorque	M0202-5A	A, R, QT RT, QI
Motor Operator	Limitorque	M0202-5B	A, R, QT RT, QI
Containment Electrical Penetration	GE	Q100A	QI, A, QT, RT
Containment Electrical Penetration	GE	Q100B	QI, A, QT, RT
Containment Electrical Penetration	GE	Q100C	QI, A, QT, RT
Containment Electrical Penetration	GE	Q100D	QI, A, QT, RT
Containment Electrical Penetration	GE	Q100E	QI, A, QT, RT
Containment Electrical Penetration	Physical Science	Q101A	QM, H, R, A, QT, RT
Containment Electrical Penetration	Physical Science	Q101C	QM, H, R, A, QT, RT
Containment Electrical Penetration	GE	Q101B	QM, QI, A, QT, RT
Containment Electrical Penetration	GE	Q102A	QM, QT, A, QT, RT

Equipment Description	Manufacturer	Component No.	Deficiency
Containment Electrical Penetration	GE	Q102B	QM, QI, A, QT, RT
Containment Electrical Penetration	GF	Q103A	QM, QI, A, QT, RT
Containment Electrical Penetration	GE	Q103B	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104A	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104B	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104C	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104D	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104E	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104F	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104G	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104H	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q104J	A, QM, QT, RT, QI

APPENDIX B (Continued)

Equipment Description	Manufacturer	Component No.	Deficiency
Containment Electrical Penetration	GE	Q105A	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q105B	A, QM, QT, RT, QI
Containment Electrical Penetration	GE	Q106B	A, QM, QT, RT, QI
Containment Electrical Penetration Torus	Conax	Q202A	A, QM, QT, RT
Containment Electrical Penetration Torus	Conax	Q202B	A, QM, QT, RT
Switchboard Wire	GE	SI57275	A, QT, RT
Switchboard Wire	GE	SI57279	A, QT, RT
Cable Splices	Raychem	SPLICE (600V PENETRATION)	A, QT, RT
Cable Splices	Raychem	SPLICE (SOV)	A, QT, RT
Solenoid Valve	ASCO	SV1001-95A	A, QT, RT
Solenoid Valve	ASCO	SV1001-95B	A, QT, RT
Solenoid Valve	ASCO	SV1400-51A	A, QT, RT
Solenoid Valve	ASCO	SV1400-51B	A, QT, RT
Relief Valve Solenoid Valve	Target Rock	SV203A	A, QT, RT
Relief Valve Solenoid Valve	Target Rock	SV203B	A, QT, RT
Relief Valve Solenoid Valve	Target Rock	SV203C	A, QT, RT

Equipment Description	Manufacturer	Component No.	Deficiency
Relief Valve Solenoid Valve	Target Rock	SV203D	A, QT, RT
Solenoid Valve for AO 220-44	ASCO	SV220-44	A, QT, RT
Terminations, Compression Type	Various	Terminations (Less Than 4 kV)	EXN
Hydrogen Analyzer	Delphi	C118	A, RPS
Hydrogen Analyzer	Delphi	C119	A, RPS
Instrument Rack	Various	C129A	QM, QI
Instrument Rack	Various	C129B	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C152	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C153	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C154	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C155	QM, QI

Equipment Description	Manufacturer	Component No.	Deficiency
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C156	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C157	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C158	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C159	QM, QI
Shutdown Panel	Various: Switches- Electroswitch Lights-GE Terminal Blocks-GE	C163	QM, QI
Instrument Rack	Various	C2201	QM, QI
Instrument Rack	Various	C2205	QM, QI
Instrument Rack	Various	C2206	QM, QI
Instrument Rack	Various	C2207	QM, QI
Instrument Rack	Various	C2250	QM, QI
Instrument Rack	Various	C2251	QM, QI
Instrument Rack	Various	C2256	QM, QI

APPENDIX B (Continued)

Equipment Description	Manufacturer	Component No.	Deficiency
Instrument Rack	Various	C2257A	QM, QI
Instrument Rack	Various	C2257B	QM, QI
Instrument Rack	Various	C2260	QM, QI
Enclosures and Terminal Blocks	Various	C2303	QM, QI
Scram SOL Fuse Panel	GE	C513AH	QM, QI
Control Panel, Reactor Bldg H&V	Various	C61A	QM, QI
Control Panel, Reactor Bldg H&V	Various	C61B	QM, QI
Standby Gas Treatment Filter Unit Panel	Various	C68	RPS
Standby Gas Treatment Filter Unit Panel	Various	C68A	RPS
Standby Gas Treatment Filter Unit Panel	Various	C68B	RPS
Standby Gas Treatment Filter Unit Panel	Various	C69	RPS
Standby Gas Treatment Filter Unit Panel	Various	C69A	RPS
Standby Gas Treatment Filter Unit Panel	Various	C69B	RPS
Control Valve	Atkomatic	CV2301-32	T, P, H, A, QI
Solenoid Valve	Atkomatic	CV9068A	T, P, H, A, QI
Solenoid Valve	Atkomatic	CV9068B	T, P, H, A, QI
DC Motor Control Center	Cutler Hammer	D7	T, P, H, A, QI
DC Motor Control Center	Cutler Hammer	D8	T, P, H, A, QI

Equipment Description	Manufacturer	Component No.	Deficiency
DC Motor Control Center	Cutler Hammer	D9	T, P, H, A, QI
Differential Press. Ind. Switch	Barton	DPIS2301-2352	T, P, QT, A, QI
Differential Press. Ind. Switch	Barton	DPIS2301-2353	T, P, QT, A, QI
Differential Press. Switch	Barton	DPIS261-2A	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2B	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2C	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2D	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2E	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2F	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2G	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2H	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2I	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2J	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2K	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2L	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2M	T, P, H, QT, A

Equipment Description	Manufacturer	Component No.	Deficiency
Differential Press. Switch	Barton	DPIS261-2N	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2O	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2P	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2Q	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2R	T, P, H, QT, A
Differential Press. Switch	Barton	DPIS261-2S	T, P, H, QT, A
Flow Transmitter	GE	FT1461A	T, QT, R, A, QI
Flow Transmitter	GE	FT1461B	T, QT, R, A, QI
Flow Transmitter	GE	FT2358	A, R, QI
EGM Control Box	Woodward	HPCI Turbine Control	A, R, QI
EGR Actuator Assembly	Woodward	HPCI Turbine Control 1	A, R, QI
Drooping Resistor Assembly	Woodward	HPCI Turbine Control 2	A, R, QI
Low-speed Potentiometer	Woodward	HPCI Turbine Control 3	A, R, QI
Speed Signal Converter	Woodward	HPCI Turbine Control 4	A, R, QI
Magnetic Pick-up	Woodward	HPCI Turbine Control 5	A, R, QI
EGR and Magnetic Pick-up Cable Assemblies	Woodward	HPCI Turbine Control 6	A, R, QI
Remote-trip SOV	Skinner	HPCI Turbine Control 7	A, R, QI

Equipment Description	Manufacturer	Component No.	Deficiency
Pressure Switch	Square D	HPCI Turbine Control 8	A, R, QI
Stop VV Limit Switch	Namco	HPCI Turbine Control 9	A, R, QI
Level Ind. Switch	Yarway	LIS263-57A	A, QT, P
Level Ind. Switch	Yarway	LIS263-57B	A, QT, P
Level Ind. Switch	Yarway	LIS263-58A	A, QT, P
Level Ind. Switch	Yarway	LIS263-58B	A, QT, P
Level Ind. Switch	Yarway	LIS263-72A	A, QT, P
Level Ind. Switch	Yarway	LIS263-72B	A, QT, P
Level Ind. Switch	Yarway	LIS263-72C	A, QT, P
Level Ind. Switch	Yarway	LIS263-72D	A, QT, P
Level Trans. Switch	Yarway	LITS263-59A	A, QT, T, P, H, QM, QI
Level Trans. Switch	Yarway	LITS263-59B	A, QT, T, P, H, QM, QI
Level Ind. Trans. Switch		LITS263-73A	A, T, QT, P
Level Ind. Trans. Switch		LITS263-73B	A, T, QT, P
Level Transmitter	Foxboro	LT5038	RPS
Level Transmitter	Foxboro	LT5049	RPS
Level Transmitter	GE	LT646A	A, P, QI
Level Transmitter	GE	LT646B	A, P, QI
Motor Operator	Limitorque	MO1001-16A	A, T, P, H
Motor Operator	Limitorque	MO1001-16B	A, T, P, H
Motor Operator	Limitorque	MO1001-18A	A, T, P, H

Equipment Description	Manufacturer	Component No.	Deficiency
Motor Operator	Limitorque	MO1001-18B	A, T, P, H
Motor Operator	Limitorque	MO1001-21	A, T, P, H
Motor Operator	Limitorque	MO1001-23A	A, R, H, QI
Motor Operator	Limitorque	MO1001-23B	A, R, H, QI
Motor Operator	Limitorque	MO1001-26A	A, R, H, QI
Motor Operator	Limitroque	MO1001-26B	A, R, H, QI
Motor Operator	Limitorque	MO1001-28A	A, H
Motor Operator	Limitorque	MO1001-29A	A, H
Motor Operator	Limitorque	MO1001-28B	A, T, P, H
Motor Operator	Limitorque	MO1001-29B	A, T, P, H
Motor Operator	Limitorque	MO1001-34A	A, T, P, H
Motor Operator	Limitorque	MO1001-34B	A, T, P, H
Motor Operator	Limitorque	MO1001-36A	A, T, P, H
Motor Operator	Limitorque	MO1001-36B	A, T, P, H
Motor Operator	Limitorque	MO1001-37A	A, T, P, H
Motor Operator	Limitorque	MO1001-37B	A, T, P, H
Motor Operator	Limitorque	MO1001-43A	A, T, P, H
Motor Operator	Limitorque	MO1001-43B	A, T, P, H
Motor Operator	Limitorque	MO1001-43C	A, T, P, H
Motor Operator	Limitorque	MO1001-43D	A, T, P, H
Motor Operator	Limitorque	MO1001-32	A, T, P, H
Motor Operator	Limitorque	MO1001-47	A, R, QI
Motor Operator	Limitorque	MO1001-7A	A, T, P, H

Equipment Description	Manufacturer	Component No.	Deficiency
Motor Operator	Limitorque	M01001-7B	A, T, P, H
Motor Operator	Limitorque	M01001-7C	A, T, P, H
Motor Operator	Limitorque	M01001-7D	A, T, P, H
Motor Operator	Limitorque	M01201-5	A, H
Motor Operator	Limitorque	M01400-24A	A, R, H, QI
Motor Operator	Limitorque	M01400-24B	A, R, H, QI
Motor Operator	Limitorque	M01400-25A	A, R, H, QI
Motor Operator	Limitorque	M01400-25B	A, R, H, QI
Motor Operator	Limitorque	M01400-3A	A, T, H
Motor Operator	Limitorque	M01400-3B	A, T, H
Motor Operator	Limitorque	M01400-4A	A, T, H
Motor Operator	Limitorque	M01400-4B	A, T, H
Motor Operator	Limitorque	M02301-14	A, R, QI
Motor Operator	Limitorque	M02301-5	A, P, H
Motor Operator	Limitorque	M02301-8	A, T, H
Motor Operator	Limitorque	M0261-2	A, T, P
Motor Operator	Limitorque	M0220-2	A, T, P
Outlet Damper	Honeywell	MON109	A, R, RPS
Outlet Damper	Honeywell	MON113	A, R, RPS
Shutdown Panel	Various	N550	A, T, QM, R, QI
RHR Pump	GE	P203A	A, T, P, H, R, QT, RT, QM
RHR Pump	GE	P203B	A, T, P, H, R, QT, RT, QM

Equipment Description	Manufacturer	Component No.	Deficiency
RHR Pump	GE	P203C	A, T, P, H, R, QT, RT, QM
RHR Pump	GE	P203D	A, T, P, H, R, QT, RT, QM
?	GE	?	A, T, P, H, R, QT, RT, QM
Core Spray Pump	GE	P215B	A, T, P, H, R, QT, RT, QM
Pressure Switch	Static-O-Ring	PS1001-104A	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-104B	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-104C	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-104D	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-89A	A, P
Pressure Switch	Static-O-Ring	PS1001-89B	A, P
Pressure Switch	Static-O-Ring	PS1001-89C	A, P
Pressure Switch	Static-O-Ring	PS1001-89D	A, P
Pressure Switch	Static-O-Ring	PS1001-90A	A, P
Pressure Switch	Static-O-Ring	PS1001-90B	A, P
Pressure Switch	Static-O-Ring	PS1001-90C	A, P
Pressure Switch	Static-O-Ring	PS1001-90D	A, P

Equipment Description	Manufacturer	Component No.	Deficiency
Pressure Switch	Static-O-Ring	PS1001-93A	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-93B	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-93C	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1001-93D	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1360-9A	A, T, P, H, QI
Pressure Switch	Static-O-Ring	PS1360-9B	A, T, P, H, QI
Pressure Switch	Static-O-Ring	PS1360-9C	A, T, P, H, QI
Pressure Switch	Static-O-Ring	PS1360-9D	A, T, P, H, QI
Pressure Switch	Static-O-Ring	PS1451A	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1451B	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1464A	A, T, P, QI
Pressure Switch	Static-O-Ring	PS1464B	A, T, P, QI
Pressure Switch	Barksdale	PS261-23A	A, T, H, P, QI
Pressure Switch	Barksdale	PS261-23B	A, T, H, P, QI
Pressure Switch	Barksdale	PS263-51A	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-51B	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-51C	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-51D	A, T, P, H, QT

Equipment Description	Manufacturer	Component No.	Deficiency
Pressure Switch	Barksdale	PS263-52A	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-53A	A, T, H, P, QI
Pressure Switch	Barksdale	PS263-53B	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-55A	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-55B	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-55C	A, T, P, H, QT
Pressure Switch	Barksdale	PS263-55D	A, T, P, H, QT
Pressure Switch	Mercoid	PS8135	RPS
Pressure Switch	Mercoid	PS8136	RPS
Pressure Transmitter	GE	PT647A	A, T, P, QM, QI
Pressure Transmitter	GE	PT647B	A, T, P, QM, QI
Pressure Transmitter	GE	PT9016	RPS
Pressure Transmitter	GE	PT9017	RPS
Pressure Transmitter	GE	PT9046	A, T, P, QM, QI
2/C #16 Twisted Shielded Pair	Various	S1	A, T, P, QM
3/C #16 Shielded	Boston Insulated Wire	S3	A, T, P, QT. QM, QI
Solenoid Valve	ASCO	S0117	A, T, P, QM, QI
Solenoid Valve	ASCO	S0118	A, T, P, QM, QI
Solenoid Valve	ASCO	SV1301-12	RPS
Solenoid Valve	ASCO	SV1301-13	RPS
Solenoid Valve	ASCO	SV1301-34	RPS
Solenoid Valve	ASCO	SV1301-35	RPS

Equipment Description	Manufacturer	Component No.	Deficiency
Solenoid Valve	ASCO	SV1301-71	RPS
Solenoid Valve	ASCO	SV2301-30	RPS
Solenoid Valve	ASCO	SV2301-31	RPS
Solenoid Valve	ASCO	SV2301-32	RPS
Solenoid Valve	ASCO	SV2301-65	RPS
Solenoid Valve	ASCO	SV2301-29	RPS
Solenoid Valve	ASCO	SV2301-64	RPS
Solenoid Valve	ASCO	SV2301-94	A, R, RPS
Solenoid Valve	ASCO	SV302-19A	QM, A, R, QI
Solenoid Valve	ASCO	SV302-19B	QM, A, R, QI
Solenoid Valve	ASCO	SV302-20A	T, P, A, QM, QI
Solenoid Valve	ASCO	SV302-20B	T, P, A, QM, QI
Solenoid Valve	ASCO	SV4044A	RPS
Solenoid Valve	ASCO	SV4044B	RPS
Solenoid Valve	ASCO	SV9007	RPS
Solenoid Valve	ASCO	SV9008	RPS
Solenoid Valve		SVL43	RPS
Solenoid Valve		SVL44	RPS
Solenoid Valve		SVL45	RPS
Solenoid Valve		SVL46	RPS
Solenoid Valve		SVL47	RPS
Solenoid Valve		SVL48	RPS

Equipment Description	Manufacturer	Component No.	Deficiency
Solenoid Valve		SVL49	RPS
Solenoid Valve		SVL50	RPS
Solenoid Valve		SVL51	RPS
Solenoid Valve		SVL52	RPS
Solenoid Valve		SVL53	RPS
Solenoid Valve		SVL54	RPS
Solenoid Valve		SVL55	RPS
Solenoid Valve		SVL56	RPS
Solenoid Valve		SVL57	RPS
Solenoid Valve		SVL58	RPS
Solenoid Valve		SVL60	RPS
Solenoid Valve		SVL62	RPS
Solenoid Valve		SVL67	RPS
Solenoid Valve		SVL70	RPS
Solenoid Valve		SVL71	RPS
Solenoid Valve		SVL72	RPS
Solenoid Valve		SVL73	RPS
Solenoid Valve		SVL74	RPS
Solenoid Valve		SVL77	RPS
Solenoid Valve		SVL78	RPS
Solenoid Valve		SVL79	RPS
Temperature Element	Electric Thermometer	TE5047	RPS
Temperature Element	Electric Thermometer	TE5048	RPS

Equipment Description	Manufacturer	Component No.	Deficiency
Temperature Switch	Fenwal	TS1291-14C	A, QT
Temperature Switch	Fenwal	TS1291-14D	A, QT
Temperature Switch	Fenwal	TS1291-14E	A, QT
Temperature Switch	Fenwal	TS1291-14F	A, QT
Temperature Switch	Fenwal	TS1291-14G	A, QT
Temperature Switch	Fenwal	TS1291-14H	A, QT
Temperature Switch	Fenwal	TS1291-14J	A, QT
Temperature Switch	Fenwal	TS1291-14K	A, QT
Temperature Switch	Fenwal	TS1360-14C	A, QT
Temperature Switch	Fenwal	TS1360-14D	A, QT
Temperature Switch	Fenwal	TS1360-15A	A, QT
Temperature Switch	Fenwal	TS1360-15B	A, QT
Temperature Switch	Fenwal	TS1360-15C	A, QT
Temperature Switch	Fenwal	TS1360-15D	A, QT
Temperature Switch	Fenwal	TS1360-16C	A, QT
Temperature Switch	Fenwal	TS1360-16D	A, QT
Temperature Switch	Fenwal	TS1360-17A	A, QT
Temperature Switch	Fenwal	TS1360-17B	A, QT
Temperature Switch	Fenwal	TS1360-17C	A, QT
Temperature Switch	Fenwal	TS1360-17D	A, QT
Temperature Switch	Fenwal	TS2370C	A, QT
Temperature Switch	Fenwal	TS2370D	A, QT
Temperature Switch	Fenwal	TS2371A	A, QT
Temperature Switch	Fenwal	TS2371B	A, QT

Equipment Description	Manufacturer	Component No.	Deficiency
Temperature Switch	Fenwal	TS2371C	A, QT
Temperature Switch	Fenwal	TS2371D	A, QT
Temperature Switch	Fenwal	TS2371B	A, QT
Temperature Switch	Fenwal	TS2372C	A, QT
Temperature Switch	Fenwal	TS2372D	A, QT
Temperature Switch	Fenwal	TS2373A	A, QT
Temperature Switch	Fenwal	TS2373B	A, QT
Temperature Switch	Fenwal	TS2373C	A, QT
Temperature Switch	Fenwal	TS2373D	A, QT
Temperature Switch	Fenwal	TS261-15A	A, QT
Temperature Switch	Fenwal	TS261-15B	A, QT
Temperature Switch	Fenwal	TS261-15C	A, QT
Temperature Switch	Fenwal	TS261-15D	A, QT
Temperature Switch	Fenwal	TS261-16A	A, QT
Temperature Switch	Fenwal	TS261-16B	A, QT
Temperature Switch	Fenwal	TS261-16C	A, QT
Temperature Switch	Fenwal	TS261-16D	A, QT
Thermostat	Johnson Control	TSD-41	RPS
Thermostat	Johnson Control	TSD-42	RPS
Thermostat	Johnson Control	TSD-43	RPS
Thermostat	Johnson Control	TSD-44	RPS
Thermostat	Johnson Control	TSD-45	RPS

Equipment Description	Manufacturer	Component No.	Deficiency
Thermostat	Johnson Control	TSD-46	RPS
Thermostat	Johnson Control	TSD-47	RPS
Thermostat	Johnson Control	TSD-48	RPS
RHR Unit Cooler	Louis-Allis Co.	VAC 204A	A, QT, QM, R, QI
RHR Unit Cooler	Louis-Allis Co.	VAC 204B	A, QT, QM, R, QI
RHR Unit Cooler	Louis-Allis Co.	VAC 204C	A, QT, QM, R, QI
RHR Unit Cooler	Louis-Allis Co.	VAC 204D	A, QT, QM, R, QI
Exhaust Fan	GE	VEX210A	A, R, RPS
Exhaust Fan	GE	VEX210B	A, R, RPS
Filter Unit	Farr Co.	VGTF201A	A, R, RPS
Filter Unit	Farr Co.	VGTF201B	A, R, RPS
AC Motor Control Center	Nelson	B17	QM, QI
AC Motor Control Center	Nelson	B18	QM, QI
AC Motor Control Center	Nelson	B20	QM, QI
Differential Pressure Indicator Switch	Barton	DPIS261-2A	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2B	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2C	T, P, H, QT, A

Equipment Description	Manufacturer	Component No.	Deficiency
Differential Pressure Indicator Switch	Barton	DPIS261-2D	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2E	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2F	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2G	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2H	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2I	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2J	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2K	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2L	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2M	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2N	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2O	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2P	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2Q	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2R	T, P, H, QT, A
Differential Pressure Indicator Switch	Barton	DPIS261-2S	T, P, H, QT, A

Equipment Description	Manufacturer	Component No.	Deficiency
Solenoid Valve	ASCO	SV2301-30	RPS
Solenoid Valve	ASCO	SV2301-31	RPS
Solenoid Valve	ASCO	SV2301-32	RPS
Solenoid Valve	ASCO	SV2301-65	RPS

APPENDIX C

Equipment Considered Acceptable or Conditionally Acceptable (Category 4.3)

LEGEND:

R - Radiation
T - Temperature
QT - Qualification time
RT - Required time
P - Pressure
H - Humidity
CS - Chemical spray
A - Material aging evaluation, replacement schedule, ongoing equipment surveillance
S - Submergence
M - Margin
I - HELB evaluation outside containment not completed
QM - Qualification method
RPN - Equipment relocation or replacement, adequate schedule not provided
EXN - Exempted equipment justification inadequate
SEN - Separate effects qualification justification inadequate
QI - Qualification information being developed
RPS - Equipment relocation or replacement schedule provided

Equipment Description	Manufacturer	Component No.	Deficiency
600 V Power and Control Cable	Kerite	210 KERITE	A
600 V Power and Control Cable	Kerite	410 KERITE	A
600 V Power and Control Cable	Kerite	C12 KERITE	A
5 kV Cable	Kerite	A1 KERITE	A
5 kV Cable	Kerite	A2 KERITE	A
5 kV Cable	Kerite	A3 KERITE	A
5 kV Cable	Kerite	A4 KERITE	A
5 kV Cable	Okonite	A1 OKONITE	A

Equipment Description	Manufacturer	Component No.	Deficiency
5 kV Cable	Okonite	A2 OKONITE	A
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco (SOV)/(LIM SW)	A0203-2A	A
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco (SOV)/(LIM SW)	A0203-2B	A
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco (SOV)/(LIM SW)	A0203-2C	A
Isolation Valve Air Operator and Valve Control System	Various, AVCO/Namco (SOV)/(LIM SW)	A0203-2D	A
600 V Power Cable	Kerite	B1 KERITE	A
600 V Power Cable	Kerite	B2 KERITE	A
600 V Power Cable	Kerite	B3 KERITE	A
600 V Power Cable	Kerite	B4 KERITE	A
600 V Power Cable	Kerite	B5 KERITE	A
600 V Power and Control Cable	Okonite	B65 OKONITE	A
Differential Pressure Switch	Barton	DPIS1001-79A	A
Differential Pressure Switch	Barton	DPIS1001-79B	A
Differential Pressure Indicator Switch	Barton	DPIS1360-1A	A
Differential Pressure Indicator Switch	Barton	DPIS1360-1B	A
Differential Pressure Indicator Switch	Barton	DPIS1459A	A

Equipment Description	Manufacturer	Component No.	Deficiency
Differential Pressure Indicator Switch	Barton	DPIS1459B	A
Differential Pressure Indicator Switch	Barton	DPIS261-12A	A
Differential Pressure Indicator Switch	Barton	DPIS261-12B	A
Differential Pressure Indicator Switch	Barton	DPIS261-12C	A
Differential Pressure Indicator Switch	Barton	DPIS261-12D	A
Differential Pressure Indicator Switch	Barton	DPIS261-36A	A
Differential Pressure Indicator Switch	Barton	DPIS261-36B	A
Differential Pressure Indicator Switch	Barton	DPIS261-37A	A
Differential Pressure Indicator Switch	Barton	DPIS261-37B	A
Differential Pressure Indicator Switch	Barton	DPIS261-38A	A
Differential Pressure Indicator Switch	Barton	DPIS261-38B	A
Differential Pressure Indicator Switch	Barton	DPIS261-39A	A
Differential Pressure Indicator Switch	Barton	DPIS261-39B	A
Differential Pressure Switch	Barton	DPIS5040A	A
Differential Pressure Switch	Barton	DPIS5040B	A
Flow Switch	Barton	FS2301-2354	A

Equipment Description	Manufacturer	Component No.	Deficiency
Level Switch	Robert Shaw	LS2301-2351A	A
Level Switch	Robert Shaw	LS2301-2351B	A
Level Switch	Robert Shaw	LS2301-2365	A
Level Switch	Robert Shaw	LS2301-2369	A
Level Switch	Robert Shaw	LS302-82A	A
Level Switch	Robert Shaw	LS302-82B	A
Level Switch	Robert Shaw	LS302-82C	A
Level Switch	Robert Shaw	LS302-82D	A
Level Switch	McDonnell & Miller	LS8020	A
Level Switch	McDonnell & Miller	LS8021	A
Level Switch	Robert Shaw	LS9068	A
Motor Operator	Limitorque	MO1001-60	A
Motor Operator	Limitorque	MO1201-80	A
Motor Operator	Limitorque	MO1301-17	A
Motor Operator	Limitorque	MO1301-25	A
Motor Operator	Limitorque	MO1301-26	A
Motor Operator	Limitorque	MO1301-60	A
Motor Operator	Limitorque	MO2301-10	A
Motor Operator	Limitorque	MO2301-3	A
Motor Operator	Limitorque	MO2301-35	A
Motor Operator	Limitorque	MO2301-36	A
Motor Operator	Limitorque	MO2301-9	A

Equipment Description	Manufacturer	Component No.	Deficiency
Motor Operator	Limitorque	M04002	A
Motor Operator	Limitorque	M04010A	A
Motor Operator	Limitorque	M04010B	A
Motor Operator	Limitorque	M04060A	A
Motor Operator	Limitorque	M04060B	A
Pressure Switch	Static-O-Ring	PS1001-83A	A
Pressure Switch	Static-O-Ring	PS1001-83B	A
Pressure Switch	Static-O-Ring	PS1001-83C	A
Pressure Switch	Static-O-Ring	PS1001-83D	A
Pressure Switch	Mercoid	PS2301-2368A	A
Pressure Switch	Mercoid	PS2301-2368B	A
Pressure Switch	Barksdale	PS2301-2389A	A
Pressure Switch	Barksdale	PS2301-2389B	A
Pressure Switch	Barksdale	PS2301-2389C	A
Pressure Switch	Barksdale	PS2301-2389D	A
Pressure Switch	Barksdale	PS2360-1	A
Pressure Switch	Barksdale	PS263-49A	A
Pressure Switch	Barksdale	PS263-49B	A
Pressure Switch	Barksdale	PS263-50A	A
Pressure Switch	Barksdale	PS263-50B	A
Pressure Switch	Barksdale	PS503A	A

Equipment Description	Manufacturer	Component No.	Deficiency
Pressure Switch	Barksdale	PS503B	A
Pressure Switch	Barksdale	PS503C	A
Pressure Switch	Barksdale	PS503D	A
Pressure Switch	Barksdale	PS504A	A
Pressure Switch	Barksdale	PS504B	A
Pressure Switch	Barksdale	PS504C	A
Pressure Switch	Barksdale	PS504D	A
Pressure Switch	Static-O-Ring	PS512A	A
Pressure Switch	Static-O-Ring	PS512B	A
Pressure Switch	Static-O-Ring	PS512C	A
Pressure Switch	Static-O-Ring	PS512D	A
Solenoid Valve	ASCO	SV220-45	A
Solenoid Valve	ASCO	SV2301-9312	A
Solenoid Valve	ASCO	SV2301-9313	A
Solenoid Valve	ASCO	SV5033A	A
Solenoid Valve	ASCO	SV5033B	A
Solenoid Valve	ASCO	SV5033C	A
Solenoid Valve	ASCO	SV5040A	A
Solenoid Valve	ASCO	SV5040B	A
Solenoid Valve	ASCO	SV5041A	A
Solenoid Valve	ASCO	SV5041B	A

Equipment Description	Manufacturer	Component No.	Deficiency
Solenoid Valve	ASCO	SV5043A	A
Solenoid Valve	ASCO	SV5043B	A
Solenoid Valve	ASCO	SV5035A	A
Solenoid Valve	ASCO	SV5035B	A
Solenoid Valve	ASCO	SV5036A	A
Solenoid Valve	ASCO	SV5036B	A
Solenoid Valve	ASCO	SV5042A	A
Solenoid Valve	ASCO	SV5042B	A
Solenoid Valve	ASCO	SV5044A	A
Solenoid Valve	ASCO	SV5044B	A
Solenoid Valve	ASCO	SV5065-10	A
Solenoid Valve	ASCO	SV5065-11	A
Solenoid Valve	ASCO	SV5065-12	A
Solenoid Valve	ASCO	SV5065-13	A
Solenoid Valve	ASCO	SV5035-14	A
Solenoid Valve	ASCO	SV5065-15	A
Solenoid Valve	ASCO	SV5065-16	A
Solenoid Valve	ASCO	SV5065-17	A
Solenoid Valve	ASCO	SV5065-18	A
Solenoid Valve	ASCO	SV5065-19	A
Solenoid Valve	ASCO	SV5065-20	A
Solenoid Valve	ASCO	SV5065-21	A
Solenoid Valve	ASCO	SV5065-22	A
Solenoid Valve	ASCO	SV5065-23	A

Equipment Description	Manufacturer	Component No.	Deficiency
Solenoid Valve	ASCO	SV5065-24	A
Solenoid Valve	ASCO	SV5065-25	A
Solenoid Valve	ASCO	SV5065-26	A
Solenoid Valve	ASCO	SV5065-27	A
Solenoid Valve	ASCO	SV5065-31	A
Solenoid Valve	ASCO	SV5065-32	A
Solenoid Valve	ASCO	SV5065-33	A
Solenoid Valve	ASCO	SV5065-34	A
Solenoid Valve	ASCO	SV5065-35	A
Solenoid Valve	ASCO	SV5065-36	A
Solenoid Valve	ASCO	SV5065-37	A
Solenoid Valve	ASCO	SV5065-38	A
Control Valve	Valcor	SV5081A	A
Control Valve	Valcor	SV5081B	A
Control Valve	Valcor	SV5082A	A
Control Valve	Valcor	SV5082B	A
Control Valve	Valcor	SV5083A	A
Control Valve	Valcor	SV5083B	A
Control Valve	Valcor	SV5084A	A
Control Valve	Valcor	SV5084B	A
Control Valve	Valcor	SV5085A	A
Control Valve	Valcor	SV5085B	A
Control Valve	Valcor	SV5086A	A

Equipment Description	Manufacturer	Component No.	Deficiency
Control Valve	Valcor	SV5086B	A
Control Valve	Valcor	SV5087A	A
Control Valve	Valcor	SV5087B	A
Control Valve	Valcor	SV5088A	A
Control Valve	Valcor	SV5088B	A
Solenoid Valve	ASCO	SV7011A	A
Solenoid Valve	ASCO	SV7011B	A
Solenoid Valve	ASCO	SV7017A	A
Solenoid Valve	ASCO	SV7017B	A
4 kV Cable Splices and Motor Terminations	Kerite	TERMINATIONS (4 kV)	A
HPCI Unit Cooler	GE	VAC201A	A
HPCI Unit Cooler	GE	VAC201B	A

APPENDIX D

Safety-Related Systems List[1]

Main Steam Line Isolation Valves

Control Rod Drive System

RHRS (LPCI mode)

RHRS (torus cooling mode)

HPCIS

Automatic Depressurization System

Core Spray System

Reactor Protection System

Primary Containment and Reactor Vessel Isolation

Standby AC Power System

DC Power System

Standby Gas Treatment System

Incident Detection Circuitry

Reactor Building Closed Cooling Water

Salt Service Water

Main Control Room Environmental Control

Reactor Building Isolation Control

Torus Water Temperature and Level Indication

Equipment Area Cooling System

[1]As submitted by the licensee.