TECHNICAL EVALUATION REPORT
FINAL DRAFT
EQUIPMENT ENVIRONMENTAL QUALIFICATION

COMMONWEALTH EDISON COMPANY
DRESDEN NUCLEAR POWER STATION UNIT 3

NRC DOCKET NO. 50-249

NRC TAC NO. 42487 FRC PROJECT C5417

EG&G IDAHO, INC. SUBCONTRACT NO. K-7615 FRC TASK 11

Prepared by

Franklin Research Center
The Parkway at Twentieth Street
Philadelphia, PA 19103

FRC Group Leader: C. J. Crane

Prepared for

EG&G Idaho, Inc.
Idaho Falls, Idaho 83401

January 31, 1981

NOTE — THIS IS A DRAFT

Because of schedule limitations, this report draft has not gone through the complete review cycle of FRC. While the overall conclusion is expected to remain the same, the reader is cautioned that some details of the report may change as the review is completed.

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The NRC Office of Inspection and Enforcement (IE) issued Bulletin 79-01B, "Environmental Qualification of Class 1E Equipment" in January 1980. This Bulletin required the Licensee to perform a detailed evaluation of the environmental qualification of Class 1E electrical equipment required to function under postulated accident conditions and to submit a report on this action.

The objectives of the NRC Equipment Environmental Qualification Review program are to evaluate nuclear power plant safety-related electrical equipment in accordance with criteria established by the NRC and to identify (1) equipment whose qualification documentation is adequate, i.e., substantiates that equipment is capable of performing its specified design basis safety function when it is exposed to a harsh environment and (2) equipment whose qualification documentation is deficient, i.e., does not give reasonable assurance that the equipment is capable of performing it specified safety function.

To meet the overall program goals, the objective of this Technical Evaluation Report is to review the Licensee's submittals to determine if the Licensee reviewed its safety-related electrical equipment for environmental qualification in accordance with the DOR Guidelines and NUREG-0588 as required by IE Bulletin 79-01B. The NRC will perform an audit of the qualification documentation references as part of its safety evaluation program. If discrepancies are found, the audit will be extended.

1.2 GENERIC ISSUE BACKGROUND

Safety-related electrical equipment must be capable of performing design safety functions under all normal, abnormal, and accident conditions. Of particular concern is the assurance that equipment will remain operable during

and following exposure to the harsh environmental conditions (i.e., temperature, pressure, humidity (steam), chemical sprays, radiation, and submergence) imposed as a result of a design basis accident. These harsh environments are generally defined by the limiting conditions resulting from the complete spectrum of postulated break sizes, break locations, and single failures consequent to a loss-of-coolant accident (LOCA), main steam line break (MSLB) inside the reactor containment, or a high energy line break (HELB) outside reactor containment (such as a main steam or feedwater line break). The purpose of equipment qualification is to provide tangible evidence that equipment will operate on demand and to verify design performance, thereby establishing assurance that the potential for common-mode failure is minimized.

Qualification criteria applied during the licensing of the older nuclear plants have been modified over the years, and industry standards concerning qualification have been revised as the design of reactor systems has changed and as regulatory and operating experience has accumulated. Examples of such standards are IEEE Standards 279-71, 323-74, 383-74, 317-76, 334-74, 382-72, and 381-77. NRC NUREG documents 0413 and 0588 have been developed to address this topic. In particular, NUREG-0588 (published for comment in December 1979) formally presented the NRC staff positions regarding selected areas of environmental qualification of safety-related electrical equipment in the resolution of General Technical Activity A-24, "Qualification of Class 1E Safety Related Equipment." The positions documented therein are applicable to plants that are or will be in the construction permit or operating license review process.

Although qualification standards and regulatory requirements have undergone considerable development, all of the currently operating nuclear power plants are required to comply with 10CFR50, Appendix A, General Design Criteria for Nuclear Power Plants, Section I, Criteria 4. This criterion states in part that "structures, systems and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents."

In addition, qualification requirements are also embodied in 10CFR50 Appendix A, General Design Criteria 1, 2, and 23 and Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Criteria III and XI. These requirements are applicable to safety-related equipment located inside as well as outside of containment.

The NRC staff has evaluated the Licensee's equipment qualification program by reviewing the qualification documentation of selected safety-related equipment as part of the operating license review for each plant. The NRC staff has also used a variety of methods to assure that these general requirements are met for electrical safety-related equipment. In the oldest plants, qualification was based on the fact that electrical components were of high industrial quality. After 1971, qualification was judged on the basis of IEEE 323-71; however, no regulatory guide was issued adopting the IEEE 323-71 standard. For plants whose Safety Evaluation Reports were issued after July 1, 1974, the Commission issued Regulatory Guide 1.89 which in most respects adopted the most recent standard, IEEE 323-74.

In 1977, the NRC staff instituted the Systematic Evaluation Program (SEP) to determine the degree to which the older operating nuclear plants deviated from current licensing criteria. The subject of electrical equipment environmental qualification (SEP Topic III-12) was selected for accelerated evaluation as part of this program. Seismic qualification of equipment was to be addressed as a separate SEP topic. In December 1977, the NRC issued a generic letter to all SEP plant Licensees requesting that they initiate reviews to determine the adequacy of existing equipment qualification documentation.

Preliminary NRC review of Licensee responses led to the preparation of NUREG-0458, an interim NRC assessment of the environmental qualification of electrical equipment. This document concluded that "no significant safety deficiencies requiring immediate remedial actions were identified." However, it was recommended that additional effort should be devoted to examining the installation and environmental qualification documentation of specific electrical equipment in all operating reactors.

On May 31, 1978, the NRC Office of Inspection and Enforcement issued IE Circular 78-08, "Environmental Qualification of Safety-Related Electrical Equipment at Nuclear Power Plants," which required all Licensees of operating plants (except those included in the SEP program) to examine their installed safety-related electrical equipment and ensure appropriate qualification documentation for equipment function under postulated accident conditions. Subsequently, on February 8, 1979, the NRC Office of Inspection and Enforcement issued IE Bulletin 79-01, which was intended to raise the status of IE Circular 78-08 to the level of Bulletin, i.e., action requiring a Licensee response. This Bulletin required a complete re-review of the environmental qualification of safety-related electrical equipment as described in IE Circular 78-08.

The review of the Licensee responses indicated certain deficiencies within the scope of equipment addressed, definition of harsh environments, and adequacy of support documentation. It became apparent that generic criteria were needed to evaluate the electrical equipment environmental qualification for both SEP and non-SEP operating plants. Therefore, during the second half of 1979, the Division of Operating Reactors (DOR) of the NRC issued internally a document entitled "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors." (The document is hereafter referred to as the "DOR Guidelines.") The document was prepared as a screening standard for reviewing all operating plants, including SEP plants. Originally it was intended that the Licensees would evaluate their qualification documentation in accordance with the DOR Guidelines. However, initial NRC review of this documentation, which was compiled to support Licensee submittals, revealed the need for obtaining independent evaluations and for accelerating the qualification review program.

In October 1979, the NRC awarded Franklin Research Center (FRC) a contract to provide assistance in the "Review and Evaluation of Licensing Actions for Operating Reactors," which included an assignment for review of equipment environmental qualification under SEP Topic III-12. FRC was given the assignment to review equipment environmental qualification documentation

and to present the results in the form of a Technical Evaluation Report for each plant included in this program.

On January 14, 1980, the NRC Office of Inspection and Enforcement issued the DOR Guidelines and IE Bulletin 79-01B, which expanded the scope of IE Bulletin 79-01 and requested additional information on environmental qualification of safety-related electrical equipment at operating facilities, excluding the 11 facilities undergoing the SEP review. This Bulletin stated that the criteria to be used in evaluating the adequacy of the safety-related electrical equipment qualification are the DOR Guidelines. The scope of the review was expanded to include high energy line breaks (inside and outside containment) in addition to equipment aging and submergence. The NRC advised the Licensees that the criteria contained in the DOR Guidelines would be used in its review of Licensee submittals; problems arising from this review would be resolved using NUREG-0588 as a guide.

In early February 1980, the NRC decided that Indian Point Units 2 and 3 and Zion Units 1 and 2 should be included within SEP Topic III-12 for the purpose of equipment environmental qualification review.

On February 21, 1980, the NRC and representatives of the SEP Plant Owners Group held an open meeting at NRC headquarters to discuss an accelerated review program in accordance with the DOR screening guidelines. Representatives of the Indian Point Units and Zion Station also attended this meeting. The NRC formally issued to all Licensees represented at the meeting the DOR Guidelines document [35]* which included a second document, "Guidelines for Identification of That Safety Equipment of SEP Operating Reactors for Which Environmental Qualification Is To Be Addressed," [35] together with the request that the Licensees review their plant systems and provide additional equipment environmental qualification information to the NRC on an accelerated schedule.

For non-SEP plants, the NRC Office of Inspection and Enforcement formed a task force including a principal reviewer in each region and a task leader from headquarters. The regional members are responsible for the technical

*For References, see Section 6.

review of the Licensees' responses to IE Bulletin 79-01B, and the task leader is responsible for the overall coordination of the review effort with NRC to assure overall consistency. The regional reviewers held meetings with the Licensees in their respective regions which resulted in staff positions being issued in a supplement to IE Bulletin 79-01B dated February 29, 1980.

In April 1980, the NRC organizational structure was modified and the Equipment Qualification Branch was formed within the new Division of Engineering. Responsibility for reviewing the status of equipment qualification for all plants was assigned to this branch.

On May 27, 1980, the NRC issued Memorandum and Order CLI-80-21, [38] specifying that Licensees and applicants must meet the requirements set forth in the DOR Guidelines and NUREG-0588 regarding environmental qualification of safety-related electrical equipment in order to satisfy 10CFR50, Appendix A, General Design Criteria, Section I, Criterion 4. This Order also established that the Safety Evaluation Reports on this subject, to be prepared by the NRC staff, must be issued on February 1, 1981 and that all subsequent actions to be taken by Licensees to achieve full compliance with the DOR Guidelines or NUREG-0588 must be completed no later than June 30, 1982.

In October 1980, EG&G awarded Franklin Research Center (FRC) a contract to provide assistance in the equipment environmental qualification review for 13 of the plants whose Licensees responded to IE Bulletin 79-01B. FRC was given the assignment to evaluate the Licensee's equipment environmental qualification submittal and to present the results in the form of a Technical Evaluation Report for each plant.

1.3 SPECIFIC ISSUE BACKGROUND

The staff held regional meetings with the Licensees and interested parties during the week of July 13, 1980 in various locations. The staff issued a second supplement to IE Bulletin 79-01B, a response to significant questions raised during the public meetings, and two Orders. The Order dated May 30, 1980 required the Licensees to comply with the previously issued Commission Memorandum and Order of May 27, 1980 (CLI-80-21). The above Orders

required the Licensees to complete the tasks identified in IE Bulletin 79-01B no later than November 1, 1980 to allow the staff to comply with the February 1, 1981 date imposed by the Commission Order. The responses to the questions were issued on February 29, 1980; and the second and third supplements to IE Bulletin 79-01B, highlighting the staff positions affecting the Licensees' responses, were issued September 29 and October 24, 1980, respectively.

1.4 SCOPE OF THE REVIEW

Environmental qualification of safety-related electrical equipment was selected by the NRC for accelerated review. Therefore, the scope of this report is limited to equipment that must function to mitigate the consequences of a loss-of-coolant accident (LOCA) or high energy line break (HELB) and whose environment is adversely affected by that event. In addition, IE Bulletin 79-01B requires enviromental qualification for all safety-related electrical equipment exposed to a harsh environment in accordance with the DOR Guidelines or NUREG-0588. Harsh environments include the limiting conditions resulting from (i) the entire spectrum of postulated line breaks resulting from a loss-of-coolant accident (LOCA) or a high energy line break (HELB) inside and outside of containment and (ii) radiation from fluids which are recirculated from inside containment to accomplish long-term cooling subsequent to an accident. Qualification aspects not included within the scope of this evaluation are:

- seismic qualification
- equipment protection against natural phenomena
- equipment operational service conditions (e.g., vibration, voltage, and frequency deviations)
- equipment located where it is subject to outdoor environments
- equipment protection against fire hazards
- equipment protection against missiles.

2. NRC CRITERIA FOR ENVIRONMENTAL QUALIFICATION

2.1 CRITERIA PROVIDED BY THE NRC

The DOR screening guidelines used by FRC to evaluate the electrical equipment environmental qualification program were:

- "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors" [35]
- "Guidelines for Identification of That Safety Equipment of SEP Operating Reactors for Which Environmental Qualification Is To Be Addressed" [35]
- NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment." [39]

These guidelines were issued by the NRC in February 1980 for implementation by all Licensees.

2.2 STAFF POSITIONS AND SUPPLEMENTAL CRITERIA

The NRC identified the following staff positions and supplemental criteria to be used in conjunction with the referenced DOR screening guidelines.

2.2.1 SERVICE CONDITIONS INSIDE CONTAINMENT FOR A LOSS-OF-COOLANT ACCIDENT (DOR GUIDELINES SECTION 4.1)

For Pressurized Water Reactors (PWRs), the DOR Guidelines state that the containment temperature and pressure conditions as a function of time should be based on the most recent NRC-approved service conditions specified in the Final Safety Analysis Report (FSAR) or other Licensee documentation. In the specific case of pressure-suppression type containments, the following minimum high temperature conditions may be used: (1) Boiling Water Reactor (BWR) Drywells -- 340°F for 6 hours and (2) PWR Ice Condenser Lower Compartments -- 340°F for 3 hours. As stated in Supplement 2 to IE Bulletin 79-01B, [36] "these values are a screening device, per the Guidelines, and can be used in

lieu of a plant-specific profile, provided that expected pressure and humidity conditions as a function of time are accounted for."

Service conditions should bound those expected for coolant and steam line breaks inside containment with due consideration given to analytical uncertainties. The steam line break condition should include superheated conditions, with peak temperature and subsequent temperature/pressure profile as a function of time. If containment spray is to be used, the impact of the spray on required equipment should be accounted for.

The adequacy of a plant-specific profile is dependent on the assumptions and design considerations at the time the profiles were developed. The DOR Guidelines and NUREG-0588 provide guidance and considerations required to determine if the calculated plant-specific temperature/pressure profiles encompass the LOCA and HELB accidents inside containment.

2.2.2 SUBMERGENCE
(DOR GUIDELINES SECTION 4.1, SUBITEM 3; and SECTION 4.3.2, SUBITEM 3)

Equipment submergence (inside or outside containment) should be addressed where the possibility exists that submergence of equipment may result from HELBs or other postulated occurrences. Supplement 2 to IE Bulletin 79-01B [36] provides the following additional criterion: If the equipment satisfies the guidance and other requirements of the DOR Guidelines or NUREG-0588 for the LOCA and HELB accidents, and the Licensee demonstrates that its failure will not adversely affect any safety-related function or mislead the operator after submergence, the equipment can be considered exempt from the submergence portion of the qualification requirements.

2.2.3 EQUIPMENT LOCATED IN AREAS NORMALLY MAINTAINED AT ROOM CONDITIONS
(DOR GUIDELINES SECTION 4.3.3)

Supplement 2 of IE Bulletin 79-01B [36] permits deferment of the review of environmental qualification for all safety-related equipment items located in plant areas where the equipment is not exposed to the direct effects of a HELB or to nuclear radiation emanating from circulation of fluids containing radioactive substances. At the Licensee's option, the review may be deferred until after February 1, 1981.

By June 30, 1982, all safety-related electrical equipment potentially exposed to a harsh environment in nuclear generating stations licensed to operate on or before June 30, 1982 shall be qualified to either the DOR Guidelines or NUREG-0588 (as applicable). Safety-related electrical equipment is that required to bring the plant to a cold shutdown condition and to mitigate the consequences of the accident. It is the responsibility of the Licensee to evaluate the qualification of safety-related electrical equipment to function in environmental extremes not associated with accident conditions and to document it in a form that will be available for the NRC to audit. Qualification to assure functioning in mild environments must be completed by June 30, 1982.

2.2.4 SIMULATED SERVICE CONDITIONS AND TEST DURATION (DOR GUIDELINES SECTION 5.2.1)

The Guidelines require that the test chamber environment envelop the required service conditions for a time equivalent to the period from the initiation of the accident until the service conditions return to normal. Supplement 2 to IE Bulletin 79-01B [36] provides the following additional criterion: "Equipment designed to perform its safety-related function within a short time into an event must be qualified for a period of at least 1 hour in excess of the time assumed in the accident analysis. The staff has indicated that time is the most significant factor in terms of the margins required to provide an acceptable confidence level that a safety-related function will be completed. The 1-hour qualification requirement is based on the acceptance of a type test for a single unit and the spectrum of accidents (small and large breaks) bounded by the single test."

2.2.5 DEFERMENT OF QUALIFICATION REVIEW

Supplement 3 to IE Bulletin 79-01B [37] permits the submittal of qualification documentation regarding the TMI Action Plan equipment and the equipment required to achieve and maintain a cold shutdown condition to be delayed as follows:

- Qualification information for installed TMI Action Plan equipment must be submitted by February 1, 1981.

- Qualification information for future TMI Action Plan equipment (reference NUREG-0737, when issued), which requires NRC pre-implementation review, must be submitted with the pre-implementation review data.

- Qualification information for TMI Action Plan equipment currently under NRC review should be submitted as soon as possible.

- Qualification information for TMI Action Plan equipment not yet installed that does not require pre-implementation review should be submitted to NRC for review by the implementation date.

- Qualification information for equipment required to achieve and maintain a cold shutdown condition should not be submitted later than February 1, 1981.

2.2.6 TEST SEQUENCE (DOR GUIDELINES SECTION 5.2.3)

Supplement 2 to IE Bulletin 79-01B [36] provides the following additional criteria:

"Sequential testing requirements are specified in NUREG-0588 and the DOR Guidelines. Licensees must follow the test requirements of the applicable document.

1. If the test has been completed without aging in sequence, justification for such a deviation must be submitted.

2. If testing of a given component has been scheduled but not initiated, the test sequence/program should be modified to include aging.

3. Test programs in progress should be evaluated regarding the ability to comply by incorporating aging in the proper sequence. These programs would then fall in the first or second category."

2.2.7 RADIATION (DOR GUIDELINES SECTIONS 4.1.2, 4.2.2, and 4.3.2, SUBITEM 2)

Supplement 2 to IE Bulletin 79-01B [36] provides the following additional criteria:

"Both the DOR Guidelines and NUREG-0588 are similar in that they provide the methods for determining the radiation source term when considering LOCA events inside containment (100% noble gases/50% iodine/1% particulates). These methods consider the radiation source term resulting from an event which completely depressurizes the primary system and releases the source term inventory to the containment.

NUREG-0578 provides the radiation source term to be used for determining the qualification doses for equipment in close proximity to recirculating fluid systems inside and outside containment as a result of LOCA. This method considers a LOCA event in which the primary system may not depressurize and the source term inventory remains in the coolant.

NUREG-0588 also provides the radiation source term to be used for qualifying equipment following non-LOCA events both inside and outside containment (10% noble gases/10% iodine/0% particulates).

When developing radiation source terms for equipment qualification, the Licensee must ensure consideration is given to those events which provide the most bounding conditions. The following table summarizes these considerations (RCS = reactor coolant system):

	LOCA	Non-LOCA HELB
Outside Containment	NUREG-0578 (100/50/1 in RCS)	NUREG-0588 (10/10/0 in RCS)
Inside Containment	Larger of	
	NUREG-0588 (100/50/1 in Containment)	NUREG-0588 (10/10/0 in RCS)
	or	
	NUREG-0578 (100/50/1 in RCS)	

Gamma equivalents may be used when consideration of the contributions of beta exposure has been included in accordance with the guidance given in the DOR Guidelines and NUREG-0588. Cobalt-60 is one acceptable gamma radiation source for environmental qualification of safety-related equipment. Cesium-137 may also be used."

3. METHODOLOGY USED BY FRC

IE Bulletin 79-01B required the Licensee to:

- provide a master list which identifies the systems and electrical equipment required to function during and subsequent to an accident and to maintain the plant in a safe condition
- provide the environmental service conditions
- identify the submergence levels
- provide written evidence of the qualification of the equipment identified
- evaluate the qualification documentation using the DOR Guidelines and NUREG-0588
- submit a Licensee Event Report (LER) for electrical equipment determined not to be environmentally qualified.

The requirements of IE Bulletin 79-01B were requested under provisions of 10CFR50.54(f), "Conditions of Licenses," which requires the Licensee to submit written statements, signed under oath or affirmation, to enable the Commission to determine whether or not a license should be modified, suspended, or revoked.

To provide assurance that the Licensee implemented the requirements of IE Bulletin 79-01B and to provide a basis for the NRC Safety Evaluation Report (SER), FRC developed this Technical Evaluation Report (TER) by:

- assessing the Licensee's responses in relation to the general requirements of the DOR Guidelines as augmented by the supplements to the 79-01B Bulletin
- using NUREG-0588 to resolve open issues.

The results and conclusions contained in this report are valid assuming that the Licensee's analyses of test reports referenced in the Licensee submittal are correct. Review of test reports was not within the scope of FRC's assignment. However, the NRC staff will audit selected analyses and

test reports, incorporating the results of the reviews with the conclusions of the TERs, when developing the plant-specific SERs.

The Licensee, Commonwealth Edison Co., identified an extensive list of safety-related electrical equipment items in various locations of the Dresden Nuclear Power Station Unit 3 in its submittals to the NRC. FRC analyzed the Licensee's listing and grouped together all identical equipment items located within plant areas that are exposed to the same environmental service conditions. This analysis resulted in a reduced listing containing 133 different equipment items that formed the basis for the review. Appendix A contains the environmental service conditions for each location, Appendix B contains a tabulation of the equipment items and locations (the tabulation does not include equipment covered by the evaluation deferment described in Section 2.2.3 of this report), and Appendix C lists the plant systems identified by the Licensee and the NRC as being essential to safety.

Using the listing of safety-related electrical equipment items,* each equipment item was reviewed by FRC in relation to:

- NRC DOR Guidelines, as modified by NRC staff interpretations
- Licensee definition of harsh service environments (Appendix A)
- analysis and/or justification of qualification
- Licensee-proposed remedies for qualification deficiencies.

Topics not within the scope of FRC evaluation are:

- completeness of the Licensee's listing of safety-related equipment
- acceptability of Licensee-provided environmental service conditions
- acceptability of Licensee-stated position concerning safety system or component function
- review and acceptability of qualification test reports and other qualification documentation.

*In this report, the term "safety-related electrical equipment" refers to the equipment defined by the two NRC Guidelines referenced in Section 2.1.

Upon completion of the final review for each equipment item, FRC developed an overall evaluation of the component and a specific conclusion with respect to its qualification. Based on the FRC conclusion, each equipment item was assigned to one of the generic qualification categories provided by the NRC. NRC categories are described below.

All equipment item numbers discussed in Section 4 of this report are associated with Reference 40.

The NRC Office of Inspection and Enforcement conducted an on-site verification inspection of selected 1E equipment to verify proper installation of equipment, overall interface integrity, location with respect to flood level for equipment inside the containment, and manufacturer's nameplate data. The manufacturer and model number from the nameplate data were compared to information given in the System Component Evaluation Work Sheets (SCEWS) of the Licensee's report. The details of this site inspection are documented in an internal NRC memorandum. [34]

NRC QUALIFICATION CATEGORIES AND DEFINITIONS

- NRC Category I.a
  EQUIPMENT THAT FULLY SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES

This category includes equipment items which are fully acceptable on the basis that all applicable criteria defined in the DOR Guidelines are satisfied and that the equipment has been found to be qualified for the life of the plant.

- NRC Category I.b
  EQUIPMENT FOR WHICH DEVIATIONS FROM THE DOR GUIDELINES ARE JUDGED ACCEPTABLE

This category includes equipment items which do not satisfy one or more of the applicable criteria defined in the DOR Guidelines; however, sufficient information has been presented to determine that the specific deviations are acceptable.

- NRC Category II.a
  EQUIPMENT THAT FULLY SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES AND HAS A SERVICE LIFE LESS THAN PLANT LIFE

This category includes equipment items that are fully acceptable on the basis that all applicable criteria defined in the DOR Guidelines are satisfied and that the equipment is qualified for a specific time interval which is less than plant life.

- NRC Category II.b
  EQUIPMENT THAT FULLY SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES PROVIDED THAT SPECIFIC MODIFICATIONS ARE MADE

This category includes equipment items which will be fully acceptable and will satisfy all applicable criteria defined in the DOR Guidelines provided that specific modifications are made on or before the designated date. When the modifications are complete, the equipment can be considered qualified.

- NRC Category II.c
  EQUIPMENT FOR WHICH DEVIATIONS FROM THE DOR GUIDELINES ARE JUDGED ACCEPTABLE

This category includes equipment items which do not satisfy one or more of the applicable criteria defined in the DOR Guidelines; however, either sufficient bases have been presented to allow a determination that the specific deviations are judged to be acceptable for less than plant life or the specific deviations are judged by FRC to be acceptable for less than plant life based on review of the applicable qualification documentation associated with the general equipment environmental qualification program.

- NRC Category III
  EQUIPMENT THAT IS EXEMPT FROM QUALIFICATION

This category includes equipment items which are exempt from qualification on the basis that (i) the equipment does not provide a safety function (i.e., should not have been included in the equipment list submitted by the Licensee), (ii) the specific safety-related function of the component can be accomplished by some other designated component which is fully qualified, or (iii) the equipment is not subject to a potentially adverse environment as a result of accidents for which proper operation of the equipment is required. In addition, any failure of the exempt component must not degrade the ability of a qualified component to perform its required safety-related function.

- NRC Category IV.a
  EQUIPMENT WHICH HAS QUALIFICATION TESTING SCHEDULED BUT NOT COMPLETED

The qualification of equipment items in this category has been judged deficient or inadequate based upon review of the documentation provided by the Licensee. However, the Licensee has stated that the equipment item is

scheduled to be tested by a designated date. The results of the testing will dictate the specific qualification category of the equipment item. Specific justification for interim plant operation prior to testing should be provided for each item.

- NRC Category IV.b
  EQUIPMENT FOR WHICH QUALIFICATION DOCUMENTATION IN ACCORDANCE WITH THE GUIDELINES HAS NOT BEEN ESTABLISHED

The qualification of equipment items in this category is deficient or inconclusive based upon review of the documentation provided by the Licensee. This equipment is judged to have a high likelihood of operability for the specified environmental service conditions; however, complete and auditable records reflecting comprehensive qualification documentation have not been made available for review. Specific justification for interim plant operation should be provided for each item.

- NRC Category V
  EQUIPMENT WHICH IS UNQUALIFIED

The DOR Guidelines require that complete and auditable records reflecting a comprehensive qualification methodology and program be referenced and made available for review of all Class 1E equipment.

The qualification of equipment items in this category has been judged to be deficient or inadequate, based upon review of the documentation provided by the Licensee. The extent to which the equipment items fail to satisfy the criteria of the DOR Guidelines can be categorized as follows: (i) documentation reflecting qualification as specified in the DOR Guidelines has not been made available for review, (ii) qualification documentation made available for review is inadequate, or (iii) the documentation indicates that the equipment item has not passed the required tests.

- NRC Category VI
  EQUIPMENT FOR WHICH QUALIFICATION IS DEFERRED

This category includes equipment items which have been addressed by the Licensee in the equipment environmental qualification submittals; however, the qualification review of this equipment has been deferred by the NRC in accordance with criteria presented in Sections 2.2.3 and 2.2.5 of this report.

4. TECHNICAL EVALUATION

4.1 METHODOLOGY USED BY THE LICENSEE

The final response to IE Bulletin 79-01B from the Licensee dated November 1, 1980 contained a general introductory section which described the Licensee's basic approach to qualification and evaluation methodology. A review by FRC has generated the following observations and concerns.

4.1.1 ENVIRONMENTAL CONDITIONS

1. The Licensee states in Section 4.1 of its response the following approach to applying DBE (design basis event) conditions to equipment:

   > Where components, because of their location, could be subjected to differing environments for the various accidents, the most severe environmental conditions were utilized for qualification. Components located within compartments with postulated HELBs (high energy line breaks) would be subjected to pressure, temperature, and humidity conditions resulting from that HELB, but would not be subjected to radiation doses in excess of 5×10^4 rads simultaneously. These same components could be subjected to radiation doses in excess of 5×10^4 rads following a LOCA (loss of coolant accident), but these doses would not be simultaneous with pressure, temperature, and humidity. To simplify this analysis, qualification data was initially sought which demonstrated operability of these components for the combination of all environmental conditions. Where qualification could not be demonstrated for the entire spectrum of conditions simultaneously, components were evaluated for the conditions associated with each individual accident. Environmental conditions are based on the specific accidents for which the components must function. Components which are exposed to harsh environments during accidents for which they are not required to function do not require qualification for these environments. Where qualification testing is to be performed, testing will be performed for each postulated environment separately.

Our position is that all components which have potential common-mode failures due to environmental stress must be qualified if any such failure would adversely affect connected circuits. Therefore, equipment which has no active function during a DBE cannot be exempted from qualification for this

reason only. FRC is also concerned that qualification for a short operating period may not be sufficient if failures in equipment at some point after a required operating period would adversely affect connected circuits. FRC notes that short operating periods are given for some of the equipment listed in the Licensee's submittal. It was not obvious that the environments specified would remain as given if the additional 1 hour of operating time required by the NRC is added to the stated operating time.

2. The Licensee used the following assumptions in evaluation of harsh and non-harsh areas:

a. Integrated doses have been calculated for areas outside the drywell. Doses were established for 1 day, 30 days, and 1 year exposure. Integrated doses of less than 5×10^4 rads during a component's service life are evaluated as nonharsh environmental conditions. Integrated doses of 5×10^4 rads and greater are evaluated as harsh environmental conditions.

For certain electronic equipment, such as process parameter transmitters, susceptibility to performance degradation may occur at threshold levels lower than 5×10^4 rads. For other types of electrical equipment which do not contain electronic components, FRC does not expect noticeable degradation to occur below 5×10^4 rads.

b. Environments were considered nonharsh when the temperature was controlled to 104F or less and the maximum integrated radiation dose was less than 5×10^4 rads. Areas where infrequent temperature extremes up to 120F could occur, and additionally, where temperature variations are not a result of the postulated accidents are considered as mild environments. Equipment in these areas functions normally in the same environment as postualted for post-accident conditions. For nonharsh and mild environments, qualification data is not required.

FRC believes that the Licensee's approach is less conservative than is permitted by the Guidelines. It is FRC's understanding that power plant equipment is usually designed for an environment of 50-104°F, 30-70% RH, and negligible radiation dose. This is not intended to imply that the equipment should be expected to fail if the temperature rises to 105°F, but certainly questions could be raised if it rises above 115°F and is exposed to high humidity and moderate radiation dose rates.

For individual equipment items that have 120°F as the specified temperature, FRC has accepted that this is non-harsh, provided that the elevated temperature is not a result of a DBE.

4.1.2 AGING

Section 4.3.6 of the Licensee's response presents the following statements concerning aging:

a. The components which are located outside the drywell and steam tunnel are exposed to insignificant amounts of radiation during normal operating conditions. The effects of radiation aging are therefore not considered in the qualification evaluation of these components.

b. Most areas outside the drywell are maintained in a suitable environmental condition by safety-related HVAC equipment. The normal maximum environmental design temperature is 103F, which in this study is defined as a nonharsh environment (Section 4.3.4). Thermal aging for these components is not required since the normal and post-accident environments are nonharsh. In addition, temperature extremes (up to 120F) may occur in some plant areas. However, these conditions would result only during periods of extreme outdoor temperatures. Equipment designed and installed per industry standards would be capable of satisfactory operation without exhibiting aging-related degradation due to these temperature extremes. Therefore, the effects of thermal aging are not considered for components located in areas where the maximum ambient temperature is maintained at 120F or below.

FRC's previous statements concerning radiation and temperature apply to these assumptions. It is not obvious that 120°F is due in all cases to causes other than a DBE. The Licensee has not clarified this for individual equipment items listed in the Licensee's response.

4.1.3 IDENTIFICATION OF ELECTRICAL COMPONENTS

The Licensee states that the FSAR was the basis for determining the equipment for which qualification documentation is required.

The clearly stated NRC position is that all equipment items needed for mitigation of an accident, including those identified in the Emergency Operating Procedures that the Licensee relies upon to mitigate design basis events, must be evaluated either to demonstrate qualification or to provide

justification that unqualified equipment will not be misleading to the operator. Whether or not equipment is listed in the FSAR is irrelevant. The Licensee should assure that all safety-related electrical equipment has been identified and addressed. For example, it appears that splices, wire terminations, and connecting lugs have not been included.

4.1.4 QUALIFIED LIFE

The Licensee has not adequately addressed the topic of qualified life for any of the safety-related equipment identified by the Licensee as essential for safe shutdown of the plant. The DOR Guidelines required that equipment with components that are susceptible to degradation caused by thermal, radiation, or wear conditions are to have an established qualified life.

The Licensee should maintain detailed maintenance records to demonstrate that those components which can be degraded are replaced on a scheduled basis in order to restore the equipment and minimize the likelihood of equipment failure to perform a safety-related function.

Qualified life is the maximum period of normal service under specified conditions for which it can be demonstrated that the functional capability of the equipment at the end of the period is still adequate for it to perform its specified safety function for an applicable accident and to remain functional as long as required after the accident. The qualified life may depend on carrying out a specified maintenance program. The qualified life of some elements of an equipment assembly may be less than the qualified life of the assembly, provided a program for replacement of such elements at intervals not exceeding their qualified lifetimes is specified and fulfilled. The qualified life of a particular equipment item may be changed during its installed life where justified by new information that permits a re-analysis of the qualification program.

It is necessary to establish a qualified life for every time of safety-related equipment that requires environmental qualification. A conservative choice of qualified life must be made to account for the assumptions and approximations made in the qualification program.

4.2 EQUIPMENT QUALIFIED FOR PLANT LIFE

This section includes equipment items which are fully acceptable on the basis that (i) all criteria defined in Section 2 of the report are satisfied or (ii) sufficient data exist to determine acceptability on the basis of judgment.

4.2.1 NRC Category I.a
EQUIPMENT THAT FULLY SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES

This section includes equipment items which are fully acceptable on the basis that all applicable criteria defined in the DOR Guidelines are satisfied and the equipment has been found to be qualified for the life of the plant. For the Dresden Unit 3, no equipment falls within this category.

4.2.2 NRC Category I.b
EQUIPMENT FOR WHICH DEVIATIONS FROM THE DOR GUIDELINES ARE JUDGED ACCEPTABLE

This section normally includes equipment items which do not satisfy one or more of the applicable criteria defined in the DOR Guidelines; however, sufficient information has been presented to determine that the specific deviations are acceptable. For the Dresden Unit 3, no equipment falls within this category.

4.3 EQUIPMENT QUALIFIED WITH RESTRICTIONS

This section includes equipment items fully acceptable on the basis that (i) all criteria defined in Section 2 of this report are satisfied; (ii) the equipment is qualified for a time interval less than plant life; or (iii) the equipment requires specific modification which, when completed, will establish full qualification.

4.3.1 NRC Category II.a
EQUIPMENT THAT FULLY SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES AND HAS A SERVICE LIFE LESS THAN PLANT LIFE

This section normally includes equipment items which are fully acceptable on the basis that all applicable criteria defined in the DOR Guidelines are satisfied and that the equipment is qualified for a specific time interval which is less than plant life. For the Dresden Unit 3, no equipment falls into this category.

4.3.2 NRC Category II.b
EQUIPMENT THAT FULLY SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES PROVIDED THAT SPECIFIC MODIFICATIONS ARE MADE

This section normally includes equipment items that will be fully acceptable and will satisfy all applicable criteria defined in the DOR Guidelines provided that specific modifications are made on or before the designated date. When the modifications are completed, the equipment can be considered qualified. For Dresden Unit 3, no equipment falls into this category.

4.3.3 NRC Category II.c
EQUIPMENT FOR WHICH DEVIATIONS FROM THE DOR GUIDELINES ARE JUDGED ACCEPTABLE

This section normally includes equipment items which do not satisfy one or more of the applicable criteria defined in the DOR Guidelines; however, either sufficient bases have been presented to allow a determination that the

specific deviations are judged to be acceptable for less than plant life, or the specific deviations are judged by FRC to be acceptable for less than plant life based on review of other applicable qualification documentation associated with the general equipment environmental qualification program. No equipment in Dresden Unit 3 falls into this category.

4.4 NRC Category III
EQUIPMENT THAT IS EXEMPT FROM QUALIFICATION

The following equipment items are exempt from qualification on the basis that (i) the equipment does not provide a safety function (i.e., should not have been included in the equipment list submitted by the Licensee); (ii) the specific safety-related function of the component can be accomplished by some other designated component which is fully qualified; or (iii) the equipment is not subject to a potentially adverse environment as a result of accidents for which proper operation of the equipment is required. In addition, any failure of the exempt component must not degrade the ability of a qualified component to perform its required safety-related function.

4.5 EQUIPMENT FOR WHICH DOCUMENTATION CONTAINS DEVIATIONS FROM THE GUIDELINES THAT ARE JUDGED UNRESOLVED

This section includes equipment items which are deficient on the basis that all criteria defined in the DOR Guidelines are not satisfied; however, the equipment item is either scheduled to be tested or is judged to have a high likelihood of operability.

4.5.1 NRC Category IV.a
EQUIPMENT WHICH HAS QUALIFICATION TESTING SCHEDULED BUT NOT COMPLETED

The qualification of the following equipment items has been judged deficient or inadequate based upon FRC's review of the documentation provided by the Licensee. However, the Licensee has stated that the equipment item is scheduled to be tested by a designated date. The results of the testing will dictate the specific qualification category of the equipment item. Specific justification for interim plant operation prior to testing should be provided for each item.

4.5.1.1 Equipment Item No. 123
Cable Located Outside Drywell
General Electric, Model Not Stated
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

> A contract will be issued for services to qualify this equipment by analysis and/or testing, failing which the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. Of the plant areas which could experience harsh pressure, temperature, and humidity, only the steam tunnel, isolation condenser pipe chase, torus compartment (near postulated HPCI break only), and RWCU rooms contain equipment which must function in 1 minute or less. Once equipment functions are completed, there would be no further active function required. In all

cases except the torus compartment, the only cables entering the potential harsh environment area would terminate in that area. In the case of the torus compartment, other cabling could be in the vicinity of the HPCI line break; however, the torus compartment is so large that the harsh environment would dissipate almost instantly with valve closure. Radiation is not concurrent with other harsh conditions.

b. Radiation doses were calculated using conservative non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. Actual doses would be less than those calculated using such conservative assumptions. In addition, harsh radiation is not concurrent with pressure, temperature, and humidity; therefore, although some material degradation may occur due to radiation, stress factors are not present to accelerate damage. Finally, most of the materials utilized for this cable are currently utilized and have demonstrated the ability to withstand the radiation levels for which they must be qualified.

4.5.1.2 Equipment Item No. 124
Cable Located Outside Drywell
Simplex, Model Not Stated
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

A contract will be issued for services to qualify this equipment by analysis and/or testing, failing which the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. Of the plant areas which could experience harsh pressure, temperature, and humidity, only the steam tunnel, isolation condenser pipe chase, torus compartment (near postulated HPCI break only), and RWCU rooms contain equipment which must function in 1 minute or less. Once equipment functions are completed, there would be no further active function required. In all cases except the torus compartment, the only cables entering the potential harsh environment area would terminate in that area. In the case of the torus compartment, other cabling could be in the vicinity of the HPCI line break; however, the torus compartment is

so large that the harsh environment would dissipate almost instantly with valve closure. Radiation is not concurrent with other harsh conditions.

b. Radiation doses were calculated using conservative non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. Actual doses would be less than those calculated using such conservative assumptions. In addition, harsh radiation is not concurrent with pressure, temperature, and humidity; therefore, although some material degradation may occur due to radiation, stress factors are not present to accelerate damage. Finally, most of the materials utilized for this cable are currently utilized and have demonstrated the ability to withstand the radiation levels for which they must be qualified.

4.5.1.3 Equipment Item No. 125
Cable Located Inside Drywell
General Electric, Model Not Stated
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

A contract will be issued for services to qualify this equipment by analysis and/or testing, failing which the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components or similar items have been partially tested for environmental conditions.

b. These components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2. This incident resulted in harsh environmental conditions.

4.5.1.4 Equipment Item No. 126
Cable Located Inside Drywell
Simplex, Model Not Stated
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

A contract will be issued for services to qualify this equipment by analysis and/or testing, failing which the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components or similar items have been partially tested for environmental conditions.

b. These components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2. This incident resulted in harsh environmental conditions.

4.5.2 NRC Category IV.b
EQUIPMENT FOR WHICH QUALIFICATION DOCUMENTATION IN ACCORDANCE WITH THE GUIDELINES HAS NOT BEEN ESTABLISHED

The qualification of the following equipment items is deficient or inconclusive based upon FRC's review of the documentation provided by the Licensee. This equipment is judged to have a high likelihood of operability for the specified environmental service conditions; however, complete and auditable records reflecting comprehensive qualification documentation have not been made available for review. Specific justification for interim plant operation should be provided for each item.

4.5.2.1 Equipment Item No. 2
Motor-Driven Pump Located in the Secondary Containment Area
General Electric Models 5106338XC23A and 5K6637XC71A
(Licensee References 3 and 25)

Licensee References 3 and 25 are not test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be

made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.5.2.2 Equipment Item Nos. 3 and 4
Motor-Operated Valve Actuators Located in the Torus Area
Limitorque Model SMB-0-15
(Licensee References 3, 6, and 26)

Licensee Reference 6 is a test report of a simulated reactor containment post-accident steam and chemical environment for a Limitorque valve operator, which will be reviewed later. For the present, this item is placed in its most likely category.

4.5.2.3 Equipment Item No. 5
Motor-Operated Valve Actuators Located in the Secondary Containment Area
Limitorque Models SMB-1 and SMB-2-40
(Licensee References 3, 9, and 25)

Licensee Reference 9 is a qualification test report which will be reviewed later. For the present, this item is placed in its most likely category.

4.5.2.4 Equipment Item No. 6B
Flow Switches Located in the SW and SE Corner Rooms
Barton Model 288
(Licensee References 3, 25, and 27)

Reference 27 is qualification documentation that FRC has not previously reviewed. The Licensee indicates that aging was not addressed. FRC's position is that aging is a necessary part of an acceptable qualification program whenever the design basis event causes an environmental stress.

4.5.2.5 Equipment Item No. 7
Motor-Operated Valve Actuator Located in the Torus Area
Limitorque Model SMB-000
(Licensee Reference 9)

Licensee Reference 9 is a qualification type test report for a Limitorque valve actuator. The Licensee has not yet established the test time. FRC notes that the Licensee's submittal indicates that the potential accident radiation exposure exceeds that in the test report.

The Licensee makes the following statements and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available for radiation, continued station operation is justified for the following reason: this valve opens on low flow to provide a minimum flow line. Should the valve fail in the open position, coolant injection would be reduced but would still exist. Additionally radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those

calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

For this present, this item is placed in its most likely category pending review of the qualification data.

4.5.2.6 Equipment Item No. 8
Pressure Transmitter Located in the SE and SW Corner Rooms
GE Model 4532K-11001
(Licensee References 3, 24, and 25)

Licensee Reference 24 is a qualification test report. This item is placed in its most likely category pending review of the qualification data.

The Licensee makes the following statements and commitments:

> This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.
>
> b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two

redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated. During the time available after estabilization of core cooling, additional coolant injection paths could be stablished, if necessary, to assure long-term cooling.

4.5.2.7 Equipment Item No. 9A
Flow Transmitter Located in the SE and SW Corner Rooms
GE Model 4532K-43001
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shutdown redundant system could be

activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

c. This equipment provides indication only and its failure would not affect safety equipment functions.

4.5.2.8 Equipment Item No. 10
Pressure Switches Located in the SE and SW Corner Rooms
Static-O-Ring Model 5N-AA3
(Licensee References 3 and 25)

References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-

> down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.5.2.9 Equipment Item No. 11
Motor-Operated Valve Actuators Located in the High Pressure Coolant Injection Room
Limitorque Models SMB-2-100, SMB-0-25, SMB-000-5, SMB-2-80, and SMB-2-150
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.10 Equipment Item No. 12
Motor-Operated Valve Actuator Located in the Drywell (Containment)
Limitorque Models SMB-1-60, SMB-2-60, and SMB
(Licensee Reference 9)

Licensee Reference 9 is a qualification test report for a Limitorque valve actuator. This item has been placed in its most likely category pending review of the qualification data. The Licensee makes the following statements and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reason. This valve is located inside drywell and is normally open. Following a postulated accident, it would remain open to allow steam flow to the HPCI turbine. Valve operation would only be required to isolate the HPCI steam line. Three additional valves are located on this steam line outside drywell to isolate the steam line. Since the harsh environment inside drywell is associated with an accident which would not affect environments or HPCI steam line pipe integrity outside drywell, the three outside drywell valves would be capable of isolating the steam line.

4.5.2.11 Equipment Item No. 13
Motor-Operated Valve Actuator Located in the Secondary Containment
Limitorque Model SMB-2-100
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. The components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.
>
> b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.
>
> c. These components undergo periodic functional testing to verify operability. This testing would identify age-related degradation.

4.5.2.12 Equipment Item No. 14
Motor-Operated Valve Actuator Located in the Steam Tunnel
Limitorque Model SMB-2-80
(Licensee Reference 25)

Licensee Reference 25 is not a qualification test report; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

1. The component undergoes periodic surveillance testing. This testing would detect age-related degradation or failure.

2. Additional vendor information is being sought to resolve outstanding qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:

   a. This component completes its function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.

b. This component undergoes periodic functional testing to verify operability. This testing would identify age-related degradation.

4.5.2.13 Equipment Item No. 15
Solenoid Valves Located in the High Pressure Coolant Injection Room
Manufacturer and Model not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.14 Equipment Item No. 16
Solenoid Valves Located in the High Pressure Coolant Injection Room
ASCO Model HT8320
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.15 Equipment Item No. 19
Differential Pressure Indicating Switch Located in the Secondary Containment Area
Barton Model 288
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in

accordance with NRC criteria presented in Section 2.2.3 of this report. The Licensee notes that the components are used to detect an HPCI line break. As soon as a break occurs, these switches will trip in a time that was conservatively assumed to be one minute.

4.5.2.16 Equipment Item No. 21
Temperature Switches Located in the High Pressure Coolant Injection Room
United Electric Controls Type F-7 Model 76B
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. The Licensee notes that these temperature switches detect an HPCI steam line break. They are set to trip at 200°F. As soon as the break occurs, they reach the setpoint temperature and trip. Calibration procedure DIS 2300-7 is used for periodic calibration. The required operating period may be longer than 1 minute if a small leak occurs, resulting in a slowly increasing temperature.

4.5.2.17 Equipment Item Nos. 33 and 34
Safety and Relief Valves and Solenoids Located Inside the Drywell (Containment)
Dresser Industries Models C5450-5, Electromatic Type 1525VX
(Licensee References 16 and 25)

Licensee Reference 16 is a qualification test report. This item has been placed in its most likely category pending review of the qualification data.

The Licensee makes the following statments and commitments:

1. The number of actuations this component is subjected to during the test is considerably larger than the acticipated number of actuations during 12 days following the accident. Hence, this component is considered qualified for the required operating time. Additionally, the environment following the June 5, 1970 depressurization incident qualifies this component by experience.

2. Although this test report did not utilize saturated atmosphere for testing, this component did operate through the saturated atmosphere of the June 5, 1970 depressurization incident and is therefore considered qualified.

3. The electrical components associated with this relief valve are enclosed in a metal enclosure which opens from the bottom only. Spray therefore could not affect operation of this component.

4.5.2.18 Equipment Item No. 35
Motor-Operated Valve Actuator Located Inside the Drywell (Containment)
Limitorque Model SMB-00-7.5
(Licensee References 6 and 26)

Licencee References 6 and 26 are qualification test reports. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.19 Equipment Item No. 36
Motor-Operated Valve Actuator Located in the Steam Tunnel
Limitorque Model SMB-00-7.5
(Licensee Reference 25)

Licensee Reference 25 is not a qualification test report; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. These components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.
>
> b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.
>
> c. These components undergo periodic functional testing to verify operability. This testing would identify age-related degradation.

4.5.2.20 Equipment Item No. 37
Differential Pressure Indicating Switch Located in the SW Corner Room
Barton Model 278/224
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee notes that these sensors are used to detect a MSLB by measuring high steam line flow. As soon as a steam line break occurs, the sensors detect high steam line flow and their function is completed. One minute was conservatively assumed as the required operating period.

If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.21 Equipment Item No. 38
Temperature Switches Located in the Steam Tunnel
United Electric Controls Type F7 Model 76B
(Licensee References 25 and 29)

Licensee References 25 and 29 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. The Licensee states that the sensors are used to detect a MSLB in the steam tunnel. As soon as a steam line break occurs, the sensors detect high temperature and their function is complete. Periodic calibration (the Licensee states) is sufficient to demonstrate component capability to function under accident environmental conditions. The Licensee's argument may not be valid if a small leak, resulting in a slowly increasing temperature, occurs.

4.5.2.22 Equipment Item No. 39
Motor-Driven Pump Located in the Secondary Containment Area
General Electric, Model 5K6637XC71A
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. If the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. It must be shown that the peak temperature of 120°F is not due to the design basis event (DBE) before it can be concluded that the DBE stress is negligible.

4.5.2.23 Equipment Item No. 40
Motor-Driven Pump Located in the SE and SW Corner Rooms
General Electric, Model Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.5.2.24 Equipment Item No. 42
Motor-Operated Valve Actuator
Located in the SE and SW Corner Rooms
Limitorque Model SMB-00-15 with Peerless AC Motors
(Licensee References 3, 6, and 26)

Licensee References 6 and 26 are qualification test reports. This item is placed in its most likely category pending review of the qualification data.

4.5.2.25 Equipment Item No. 43
Motor-Operated Valve Actuator Located in the SE and SW Corner Rooms
Limitorque Models SMB-1-40 and SMB-1
(Licensee Reference 9)

Licensee Reference 9 is a test report for a Limitorque valve actuator for Class 1E service outside primary containment. This item is placed in its most likely category pending review of the qualification data.

4.5.2.26 Equipment Item No. 44
Motor-Operated Valve Actuator Located in the Torus Area
Limitorque Models SMB-000-2, SMB-000-5, SMB-00-10, and SMB-4
(Licensee References 3, 6, and 26)

Licencee Reference 3 is not a qualification document for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus one hour, FRC concludes that the

qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. Licensee References 6 and 26 are qualification test reports. This item is placed in its most likely category pending review of the qualification data.

4.5.2.27 Equipment Item No. 45
Motor-Operated Valve Actuator Located in the Secondary Containment Area
Limitorque Model SMBST-150
(Licensee References 3 and 9)

Licensee Reference 9 is a qualification test report. This item is placed in its most likely category pending review of the qualification data.

The Licensee makes the following statements and commitments:

Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:

a. Existing qualification data is within a factor of 2 of the calculated radiation dose.

b. Radiation doses were calculated using conservative non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. Actual doses would therefore be less than those calculated using such conservative assumptions.

c. Other equipment similar in design to this equipment has successfully been qualified for environments in excess of the calculated requirement for this equipment.

4.5.2.28 Equipment Item No. 46
Motor-Operated Valve Actuator Located in the Secondary Containment Area
Limitorque Model SMB-0-15
(Licensee References 3, 25, and 26)

Licensee Reference 26 is a qualification test report. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.29 Equipment Item No. 47
Motor-Operated Valve Actuators Located in the SE and SW Corner Rooms
Limitorque Model SMB
(Licensee Reference 9)

Licensee Reference 9 is a test report for a Limitorque valve actuator for Class 1E service outside primary containment. This item is placed in its most likely category pending review of the qualification data.

The Licensee states the following:

> Actual operations will be limited following a postulated accident. This test is sufficient to demonstrate qualification for required actuations.

4.5.2.30 Equipment Item No. 48
Flow Transmitter Located in the SE and SW Corner Rooms
General Electric Model 4532K-13001
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

c. This equipment provides indication only and its failure would not affect safety equipment functions.

4.5.2.31 Equipment Item No. 50
Pressure Switches Located in the SE and SW Corner Rooms
Static-O-Ring Model 5N-AA3
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.5.2.32 Equipment Item No. 51
Motor-Operated Valve Actuators Located in the Torus Area
Limitorque Model SMB-2-80
(Licensee Reference 9)

Licensee Reference 9 is a test report for a Limitorque valve actuator for Class 1E service outside primary containment. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus one hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.33 Equipment Item No. 52
Motor-Operated Valve Actuator Located in the Torus Area
Limitorque Model SMB-3
(Licensee References 3, 6, and 26)

Licensee References 6 and 26 are test reports of a simulated reactor containment post-accident steam and chemical environment for a Limitorque valve operator. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.34 Equipment Item No. 54
Motor-Operated Valve Actuator Located in the Torus Area
Limitorque Model SMB-000-5
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.35 Equipment Item No. 55
Solenoid Valve Located in the Torus Area
ASCO Model HT831614
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 15 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.36 Equiment Item No. 57
Solenoid Valves Located in the Steam Tunnel
ASCO Model LB831454
(Licensee Reference 25)

Licensee Reference 25 is not a qualification document for this item. The Licensee has indicated that the required operating period is 5 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.37 Equipment Item No. 56
Solenoid Valves Located in the Secondary Containment Area
ASCO Model 8317A29, 8320A19
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 15 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.38 Equipment Item No. 58
Differential Pressure Indicating Switch
Located in the SE and SW Corner Rooms
Static-O-Ring Model 12R2-KK815-V
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments.

> This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.
>
> b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models

would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.5.2.39 Equipment Item No. 59
Pressure Switch Located in the Secondary Containment
Barksdale Model D2X-H18-UL
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.40 Equipment Item No. 60
Pressure Switches Located in the Secondary Containment Area
Meletron, Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.41 Equipment Item No. 61
Pressure Switches Located in the Secondary Containment Area
Static-O-Ring Models 12N-K4 and 12N-AA5
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.42 Equipment Item No. 62A
Solenoid Valve Located in the Torus Area
Versa Model VPS2402
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 10 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.43 Equipment Item No. 62B
Solenoid Valves Located in the Torus Area
Versa Models VGS4522 and VGS4422
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. Radiation doses were calculated using conservative non-mechanistic models. Mechanistic release models would result in radiation releases which occur several

hours after the postulated accident. Actual doses would therefore be less than those calculated using such conservative assumptions.

b. An alternate flow path is available to relieve torus vacuum in the event these components should fail.

4.5.2.44 Equipment Item No. 64
Motor-Operated Damper Located in the Secondary Containment Area
Limitorque Model SMB-00-15
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.45 Equipment Item No. 66
Motor Operated Dampers Located in the Secondary Containment
Limitorque Model H-3BC
(Licensee References 3, 9, and 25)

Licensee References 9 is not a qualification test report. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.46 Equipment Item No. 73
Reactor Building Emergency Air Cooler Located in the SE and SW Corner Rooms
General Electric Model 5K182AL2561
(Licensee References 2 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

This equipment requires qualification for low-level harsh temperature and other environmental parameters. In-plant measurements will be made to establish worst-case temperature. If worst-case temperature is determined to be mild (120°F or less), an attempt will be made to qualify

this equipment by testing/analysis for other harsh environmental parameters. If the worst-case temperature is determined to be greater than 120°F, an attempt will be made to qualify this equipment by testing/analysis for all harsh environmental parameters including temperature. If attempts to qualify this equipment by testing/analysis fail, the appropriate equipment or parts thereof will be replaced with qualified components. Although qualification data is not available, continued station operation is justified for the following reasons:

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.5.2.47 Equipment Item No. 79
Motor-Operated Valve Actuator Located Inside Drywell (Containment)
Limitorque Model SMB-2-60
(Licensee Reference 9)

Licensee Reference 9 is a test report for a Limitorque valve actuator for Class 1E service outside primary containment. This item has been placed in its most likely category pending review of the qualification data. The Licensee makes the following statements and commitments:

Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.

b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.

c. These components undergo periodic functional testing to verify operability and this testing would identify age-related degradation.

d. These components or identical components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2.

4.5.2.48 Equipment Item No. 80
Motor-Operated Gate Valve Actuator Located in the Shutdown Cooling Pump Room
Limitorque Model SMB-2-60 with Peerless DC Motor
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documentation for this item. The Licensee has indicated that the required operating period is 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.49 Equipment Item No. 81
Motor-Operated Gate Valve Actuator
Located in the Torus Area
Limitorque Models SMB-2-60 and SMB-2-40
(Licensee Reference 9)

Licensee Reference 9 is a test report for a Limitorque valve actuator for Class 1E service outside primary Containment. This item has been placed in its most likely category pending review of the qualification data. The Licensee has indicated that the required operating period is less than 40 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.50 Equipment Item No. 82
Motor-Operated Gate Valve Actuator
Located Inside Drywell (Containment)
Limitorque Model SMB-1-25
(Licensee References 6 and 26)

Licensee References 6 and 26 are test reports of a simulated reactor containment post-accident steam and chemical environment for a Limitorque valve operator. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.51 Equipment Item No. 83
Motor-Operated Gate Valve Actuator Located in the Secondary Containment
Limitorque Model SMB-1-40
(Licensee References 3 and 25)

Licensee Reference 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statement and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. These components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.
>
> b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.
>
> c. These components undergo periodic functional testing to verify operability. This testing would identify age-related degradation.

4.5.2.52 Equipment Item No. 84
Motor-Operated Valve Actuator Located in the Drywell
Limitorque Model SMB-000-5
(Licensee References 6 and 26)

Licensee References 6 and 26 are test reports of a simulated reactor containment post-accident steam and chemical environment for a Limitorque valve operator. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.53 Equipment Item No. 85
Solenoid Valve Located in the Secondary Containment Area
ASCO Models WPHT-8300B61F, 91768D, 694615, and 831614
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 1 minute or less. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.54 Equipment Item No. 86
Position Switch Located in the Secondary Containment Area
Namco Snap-Lock Model Mark II D1200G
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 20 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.55 Equipment Item No. 87
Position Switch Located in Torus The Area
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less

than 20 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.56 Equipment Item No. 88
Solenoid Ball Valve Located in Secondary Containment Area
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.57 Equipment Item No. 89
Squib Shear Valve Located in the Secondary Containment Area
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is <1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.58 Equipment Item No. 90
Solenoid Valve Located in Secondary Containment Area
ASCO Models HVA90-405-2A and 94473P1/P2
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.59 Equipment Item No. 91
Solenoid Valve Located in the Secondary Containment Area
ASCO Model 3384-8-R
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.60 Equipment Item No. 92
Level Switch Located in the TIP Room
Magnetrol Model 402
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.61 Equipment Item No. 93
Position Switch Located in the TIP Room
NAMCO Snap-Lock, Mark II D1200G
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.62 Equipment Item No. 94
Motor-Operated Valve Located in the Steam Tunnel
Limitorque Model SMB-000-5
(Licensee References 6 and 26)

Licensee References 6 and 26 are qualification test reports. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.63 Equipment Item No. 95
Solenoid Valve Located in the Secondary Containment
ASCO Model WPH8300B61F
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 5 seconds. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.64 Equipment Item No. 96
Pressure Switch Located in the Secondary Containment Area
Meletron Model 372-665-49A
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 10 minutes. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.65 Equipment Item No. 97
Pressure Switch Located in the Secondary Containment Area
Barksdale Model B2T-M12SS-GE
(Licensee References 3, 25, and 31)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item

during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. Reference 31 is a test report which FRC has not previously reviewed.

4.5.2.66 Equipment Item No. 98
Level Indicating Switch Located in the Secondary Containment Area
Yarway Model 4418C
(Licensee References 3, 25, and 32)

Licensee Reference 32 is a test report in which a seismic test and a high temperature excursion were conducted for a Yarway Model 4418TC level indicating switch. With regard to this test report, FRC comments:

a. The Guidelines require that the test specimen be the same as the equipment being qualified. The Licensee did not present an analysis comparing the impact of deviations between the test specimen's specific design features, materials, and production procedures and those of the installed equipment. Therefore, an independent conclusion cannot be reached regarding the extent of similarity.

b. The test specimen was not subjected to thermal aging. The Guidelines state that thermal aging of test specimens is not required if the component does not contain materials known to be susceptible to significant degradation due to aging. The materials used in this equipment have not been analyzed for susceptibility to aging degradation. Therefore, the test result cannot be considered conclusive.

c. The test specimen was not exposed to nuclear radiation to simulate DBE conditions, nor was information submitted to demonstrate that the materials used would not be degraded by exposure to nuclear radiation, as is required by the Guidelines. Therefore, the test must be considered inconclusive.

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. If the environmental stress remains negligible for this item, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.67 Equipment Item No. 100
Pressure Transmitter Located in the Secondary Containment Area
Barksdale Model B2T-M12SS-GE
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 2 minutes. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report. The Licensee is investigating the existence of qualification data with the manufacturer.

4.5.2.68 Equipment Item No. 101
Motor-Operated Valve Located Inside the Drywell
Limitorque Model SMB
(Licensee reference not cited)

No qualification references have been cited for this item. The Licensee make the following statements and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. These components or similar items have been partially tested for environmental conditions.
>
> b. These components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2. This incident resulted in harsh environmental conditions.

4.5.2.69 Equipment Item No. 102
Differential Pressure Indicating Switch Located in the Secondary Containment Area
Barton Model 288
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 2 minutes. If the environmental stress remains negligible for this item

during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.70 Equipment Item No. 103
Solenoid Valve Located Inside the Drywell
ASCO Model 206-380-3F
(Licensee Reference 33)

Licensee Reference 33 is not a qualification test report. This item has been placed in its most likely category pending review of the qualification data.

4.5.2.71 Equipment Item No. 104
Radiation Element Sensor and Converter Located in the Secondary Containment Area
General Electric Model GEK-802-D
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee notes that these monitors are used to detect the release of radioactive material. This ventilation system is isolated following an accident and the standby gas treatment system is used. This equipment would, therefore, only be required to function until the standby gas treatment system starts.

The Licensee has indicated that the required operating period is less than 10 minutes. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.72 Equipment Item No. 105
Solenoid Valve Located in the Ventilation Room
Versa, Model Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The

Licensee has indicated that the required operating period is 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.73 Equipment Item No. 108
4.16-kV Switchgear Located in the Secondary Containment Area
General Electric Magneblast Type AMH 4.76-250
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensees make the following statements and commitments:

> This equipment is subjected to harsh radiation only, and will be relocated and/or shielded to reduce the radiation exposure to a non-harsh level. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. Radiation doses were calculated using conservative non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. Actual doses would therefore be less than those calculated using such conservative assumptions.
>
> b. Dose to this equipment is caused by only one loop of a redundant piping system. Operator actions taken to shut down redundant systems will further reduce exposure to this equipment.

4.5.2.74 Equipment Item No. 110A
480-V Motor Control Center Located in the Secondary Containment Area
General Electric Type 7700
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item.

The Licensee makes the following statements and commitments:

This equipment is subjected to harsh radiation only, and will be relocated and/or shielded to reduce the radiation exposure to a non-harsh level. Although qualification data is not available, continued station operation is justified for the following reasons:

a. Radiation doses were calculated using conservative non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. Actual doses would therefore be less than those calculated using such conservative assumptions.

b. Dose to this equipment is caused by only one loop of a redundant piping system. Operator actions taken to shut down redundant systems will further reduce exposure to this equipment.

4.5.2.75 Equipment Item No. 121
Motor-Operated Valve Actuator Located in the Secondary Containment Area
Limitorque Models SMB-4-200 and SMB-1-60
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

Additional vendor information is being sought to resolve outstanding environmemtal qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.

b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.

c. These components undergo periodic functional testing to verify operability. This testing would identify age-related degradation.

d. These components or identical components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2.

4.5.2.76 Equipment Item No. 122
Differential Pressure Indicating Switches Located in the Secondary Containment Area
Barton Model 288-4235
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 1 minute. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.77 Equipment Item No. 127
Cable Located Outside the Drywell
Newark Electric Co., Model Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is less than 10 minutes. If the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.5.2.78 Equipment Item No. 128
Electrical Penetration of the Drywell
GE-NEBS, Model Not Stated
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

> Additional vendor information is being sought to resolve outstanding environmental qualification items. Although qualification data is not available, continued station operation is justified for the following reasons:
>
> a. These components or similar items have been partially tested for environmental conditions.

b. These components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2. This incident resulted in harsh environmental conditions.

4.6 NRC Category V
EQUIPMENT WHICH IS UNQUALIFIED

The DOR Guidelines requires that complete and auditable records reflecting a comprehensive qualification methodology and program be referenced and made available for review for all Class 1E equipment.

The qualification of the following equipment items has been judged to be deficient or inadequate, based upon FRC's review of the documentation provided by the Licensee. The extent to which the equipment items fail to satisfy the criteria of the DOR Guidelines can be categorized as follows: (i) documentation reflecting qualification as specified in DOR Guidelines has not been made available for review; (ii) documentation made available for review is inadequate; or (iii) the documentation indicates that the equipment item has not successfully passed required tests. The following equipment items are therefore considered unqualified.

4.6.1 Equipment Item No. 1
Temperature Switches Located in the RWCU Room
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee notes that, where these temperature switches are used for leak detection in the RWCU room, conditions are normally non-harsh. Immediately following a leak, the temperature will increase. As soon as the leak occurs, the switches will function, initiating system isolation within 1 minute. This does not satisfy the requirement for qualification for operating period plus one hour.

4.6.2 Equipment Item No. 6A
Flow Switches Located in the SE and SW Corner Rooms
Barton Model 288
(Licensee References 3, 25, and 27)

Reference 27 is qualification documentation that FRC has not previously reviewed. The Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

4.6.3 Equipment Item No. 31
MSIV and Solenoid for Air Operator Located Inside the Drywell (Containment)
Automatic Valve Co. Model C5512
(Licensee References 16 and 25)

Licensee Reference 16 is a qualification test report. This item has been placed in its most likely category pending review by FRC using previous experience.

The Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.

b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.

c. These components undergo periodic functional testing to verify operability and this testing would identify age-related degradation.

d. These components or identical components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2.

4.6.4 Equipment Item No. 32
MSIV and Solenoid for Air Operator Located in the Steam Tunnel
Automatic Valve Co. Model C5512
(Licensee References 16 and 25)

Licensee Reference 16 is a qualification test report. This item has been placed in its most likely category pending review of the qualification data.

The Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components are designed as redundant pairs, each separated from the other with only one subjected to a harsh environment.

b. These components complete their function in a very short period of time and would not experience significant effects of increased environmental conditions in this short time period.

c. These components undergo periodic functional testing to verify operability and this testing would identify age-related degradation.

d. These components or identical components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2.

4.6.5 Equipment Item No. 49
Differential Pressure Transmitters
Located in the SE and SW Corner Rooms
Barton Model 368
(Licensee References 3 and 30)

Licensee Reference 30 is a qualification test report. This item has been placed in its most likely category pending review of the qualification data.

The Licensee makes the following statements and commitments:

1. Test was conducted in a steam environment but humidity was not measured during the test.

2. This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:

   Radiation doses were calculated using convervative, non-mechanistic models. Mechanistic release models would result in radiation releases which occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long term cooling.

4.6.6 Equipment Item No. 53
Flow Switches Located in the SE and SW Corner Rooms
Barton Model 289
(Licensee References 3, 25, and 28)

Licensee References 28 is a qualification report not previously reviewed by FRC. Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons.

a. The harsh temperature and humidity are a direct result of equipment operation, not the postulated accident. Equipment performance under these temperature/humidity conditions is demonstrated during periodic monthly operability tests.

b. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed for coolant injection. This would result in radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shut-

down redundant system could be activated. During the time available after stabilization of core cooling, additional coolant injection paths could be established, if necessary, to assure long-term cooling.

Humidity was maintained for only 2 hours.

4.6.7 Equipment Item No. 63
Electric Air Heater Located in the Secondary Containment Area
E. L. Weigland Models 1-113462 and 2-113462
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operation equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.8 Equipment Item No. 65
Exhaust Fan Located in the Secondary Containment Area
General Electric Model 5K256AK2037
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments.

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation

releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operation equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.9 Equipment Item No. 67
High Temperature Switch Located in the Secondary Containment
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operation equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.10 Equipment Item No. 68
Flow Transmitter Located in the Secondary Containment Area
Foxboro Model 15-A-1
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation

releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operation equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.11 Equipment Item No. 69
Flow Switch Located in the Secondary Containment
McDonnel Model AF-2
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operation equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.12 Equipment Item No. 70
Flow Switch Located in the Secondary Containment Area
Mericord Model PPQW
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation

doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operation equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.13 Equipment Item No. 71
Local Panel Located in the Secondary Containment Area
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

> This equipment is subjected to harsh radiation only, and will be relocated and/or shielded to reduce the radiation exposure to a non-harsh level. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.14 Equipment Item No. 99
Level Indicating Transmitting Switch Located in the Secondary Containment Area
Yarway Model 4418CE
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification test reports; therefore, qualification documentation is deficient for this item. The Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons. Radiation doses were calculated using conservative, non-mechanistic models. Mechanistic release models would result in radiation releases that occur several hours after the postulated accident. During this time, action will be taken to shut down redundant systems beyond those needed. This would result in significant radiation exposures to only one of two redundant equipment trains. Also, actual doses would be less than those calculated using such conservative assumptions. Finally, should the operating equipment suffer degradation due to radiation exposure, the shutdown redundant system could be activated.

4.6.15 Equipment Item No. 129
Terminal Blocks Located Inside the Drywell
General Electric Model 264B965
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components or similar items have been partially tested for environmental conditions. (FRC notes that the Licensee has not stated which tests were conducted.)

b. These components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2. This incident resulted in harsh environmental conditions.

4.6.16 Equipment Item No. 130
Terminal Blocks Located Inside the Drywell
Allen Bradley, Model Not Stated
(Licensee reference not cited)

No qualification reference has been cited for this item. The Licensee makes the following statements and commitments:

This equipment will be replaced with qualified equipment. Although qualification data is not available, continued station operation is justified for the following reasons:

a. These components or similar items have been partially tested for environmental conditions.

b. These components remained functional during the June 5, 1970 depressurization incident at Dresden Unit 2. This incident resulted in harsh environmental conditions.

4.7 NRC Category VI
EQUIPMENT FOR WHICH QUALIFICATION IS DEFERRED

This section normally includes equipment items which have been addressed by the Licensee in the equipment environmental qualification submittal; however, the qualification review of this equipment has been deferred by the NRC in accordance with criteria presented in Sections 2.2.3 and 2.2.5 of this report. No equipment in Dresden Unit 3 falls into this category.

4.7.1 Equipment Item No. 9B
Flow Transmitter Located in the SE and SW Corner Rooms
GE Model 4532K13001
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documentation for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.2 Equipment Item No. 17
Turbine Stop Valve Located in the High Pressure Coolant Injection Room
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.3 Equipment Item No. 18
Turbine Gland Seal Condenser Drain Pump Located in the High Pressure Coolant Injection Room
General Electric Model 5B225A3525
(Licensee References 1, 3, and 25)

Licensee References 1, 3, and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the total operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.4 Equipment Item No. 20
Motor Speed Changer Located in the High Pressure Coolant Injection Room
GE Gear Type M-304-A SN 138347
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.5 Equipment Item No. 22
Motor Gear Unit Located in the High Pressure Coolant Injection Room
General Electric Model 5CD14D19A111620
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.6 Equipment Item No. 23
Emergency Oil Pump, Motor-Driven, Located in the High Pressure Coolant Injection Room
General Electric Model 5CD218E252
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.7 Equipment Item No. 24
Auxiliary Oil Pump Located in the High Pressure Coolant Injection Room
General Electric Model 5CB326E765
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.8 Equipment Item No. 25
Gland Steam Exhauster Fan Located in the High Pressure Coolant Injection Room
General Electric Model 5BC74AV2193
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.9 Equipment Item No. 26
Pressure Switches Located in the Secondary Containment Area
Barksdale Model B2T-12SS-GE
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.10 Equipment Item No. 27
High Pressure Coolant Injection Motor Control Signal Converter,
Location Not Stated
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.11 Equipment Item No. 28
Pressure Switch Located in the High Pressure Coolant Injection Room
Mercoid Models 443132R26E and DA7043-804
(Licensee References 3 and 25)

Licensee References 2 and 25 are not qualification documents for the items. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.12 Equipment Item No. 29
Level Switch Located in the Torus Area
Magnetrol Models 291 and 402
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.13 Equipment Item No. 30
Flow Switch Located in the HPCI Room
Barton Model 289
(Licensee References 3, 25, and 28)

Licensee References 3 and 25 are not qualification documents for this item. Reference 28 is a test report that FRC has not previously reviewed. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.14 Equipment Item No. 72
Diesel Generator Cooling Water Pump Located in Diesel Room 3
Crane Chempump GPS-75L-46H-3T
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.15 Equipment Item No. 74
High Pressure Coolant Injection Building Emergency Air Cooler
Located in the Secondary Containment Area
General Electric Model 5K182AL2591
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 12 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.16 Equipment Item No. 75
Diesel Oil Transfer Pump Located in Units 2 and 3
Diesel Generating Rooms
General Electric Model 5K182BL6239
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period plus 1 hour, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

The Licensee stated that this equipment is required for the duration of lost offsite power. It is assumed that offsite power can be restored in 30 days.

4.7.17 Equipment Item No. 76
Level Switch Located in the Unit 3 Diesel
Generating and Day Tank Rooms
Magnetrol Model A-103F
(Licensee References 3, 18, and 25)

Licensee Reference 18, which FRC has not previously reviewed, is a test report for a Magnetrol level switch. Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains

negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.18 Equipment Item No. 77
Solenoid Valve Located in Unit 3 Diesel Generator and Day Tank Rooms
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

The Licensee also states that this equipment is used in conjunction with the diesel generator. It is assumed that offsite power can be restored within 30 days.

4.7.19 Equipment Item No. 78
Level Switch Located in the Diesel Generator and the Day Tank Rooms for Units 2/3
Magnetrol Model A-103F-EP/VP
(Licensee References 3, 18, and 25)

Licensee Reference 18, which FRC has not previously reviewed, is a test report for a Magnetrol level switch. Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.20 Equipment Item No. 106
Isolation Damper and Solenoid Valves (2) Located in Units 2/3 Diesel Generator Rooms
Johnson Service Model V6183
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

The Licensee noted that this equipment is required for the duration of a loss of offsite power. It is assumed offsite power can be restored within 30 days.

4.7.21 Equipment Item No. 107
Standby Diesel Generator Located Outside Primary Containment
General Motors Model A-20-C1
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.22 Equipment Item No. 109
480-V Switchgear Located in the Secondary Containment Area
General Electric Type AKDS
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the

stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.23 Equipment Item No. 110B
480-V Motor Control Center Located in the Secondary Containment Area
General Electric Type 7700
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.24 Equipment Item No. 111
Diesel Generator Excitation Cabinets Located in Diesel Rooms 2/3 and 3
Vickers Model 35D 870-2
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operation period is 30 days. If the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.25 Equipment Item No. 112
Diesel Generator Engine Control Panel Located in Diesel Generator Rooms 2/3 and 3
General Motors Model S20 E4GW
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operation period is 30 days. If the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be

deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.26 Equipment Item No. 113
Diesel Generator Speed Sensing Panel Located in Diesel Rooms 2/3 and 3
General Motors Model S20 E4GW
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operation period is 30 days. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.27 Equipment Item No. 114
Diesel Generator Relay and Motor Panel Located in Diesel Rooms 2/3 and 3
Ideal Electric Model 265673
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operation period is 30 days. If the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.28 Equipment Item No. 115
4-kV Non-Segregated Phase Bus Located in Diesel Rooms 2/3 and 3
Manufacturer and Model Number Not Stated
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that the required operating period is 30 days. If the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be

deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.29 Equipment Item No. 116
Battery Charger Located in the Battery Charger Room
Gould Model GRF 240T100X, Float Charger, 24525F30
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.30 Equipment Item No. 117
250-V DC Motor Control Center Located in the Battery Charger Room
Cutler Hammer Type Unitrol Model 95D9801ED745
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.31 Equipment Item No. 118
250-V DC Reactor Building Motor Control Center Located in the Secondary Containment Area
Cutler Hammer Type Unitrol Model 3447-149
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be

deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.32 Equipment Item No. 119
Battery Located in the Battery Charger Room
Gould Models FPS-25 and DPR-9
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

4.7.33 Equipment Item No. 120
DC Distribution Panel Located in the Battery Charger Room
Cutler Hammer Type Unitrol Models 95D9801ED745 and 6CF643663
(Licensee References 3 and 25)

Licensee References 3 and 25 are not qualification documents for this item. The Licensee has indicated that continuous operation is required. Since the environmental stress remains negligible for this item during the stated operating period, FRC concludes that the qualification review can be deferred until after February 1, 1981 in accordance with NRC criteria presented in Section 2.2.3 of this report.

5. CONCLUSIONS

FRC's review of the qualification documentation and other information submitted by the Commonwealth Edison Company for these equipment items and their applications in the Dresden Unit 3 plant has resulted in the following categories:

NRC Category	Compliance With The DOR Guideline Requirements	Quantity Of Equipment Items
I.a	Equipment Fully Satisfies All Applicable Requirements for Life of the Plant	0
I.b	Equipment Does Not Meet All Applicable Requirements for Life of the Plant; However, Deviations are Judged Acceptable	0
II.a	Equipment Fully Satisfies All Applicable Requirements for Less Than Plant Life	0
II.b	Equipment Fully Satisfies All Applicable Requirements Provided That Specific Modifications are Made	0
II.c	Equipment for Which the Licensee Has Not Provided Evidence of Full Compliance with the Guidelines, but Which is Judged by FRC To Be Satisfactory for Less Than Plant Life Based on Total EEQ Program Review	0
III	Equipment is Exempt from Qualification	0
IV.a	Equipment has Qualification Testing Scheduled	4
IV.b	Equipment has High Likelihood of Operability; However, Proper Qualification Documentation is Not Available	81
V	Equipment is Unqualified	16
VI	Equipment Evaluation is Deferred	33

In general, the major deficiencies that have been identified are shown in the summary review sheets at the end of the section.

The conclusions stated herein represent a summary of the results of the equipment environmental qualification evaluation conducted by FRC in accordance with the methodology presented in Section 3. The evaluation results are largely based on the available qualification documentation provided by the Licensee. The results of the review do not necessarily imply that the equipment is unreliable or unsafe or that it represents a significant plant safety issue; they do imply, however, that qualification documentation is inadequate and that additional information is required.

The Equipment Environmental Qualification Summary Form that is presented on the following 12 pages shows the overall results of the FRC review. The entries on this form delineate the overall status of each specific equipment item with respect to compliance with the Guidelines criteria defined in Section 2.0 and the resultant qualification categories defined in Section 3.0. The following designations are used:

X = A deficiency with respect to compliance with a Guidelines requirement. Deficiencies result in equipment items being categorized as unqualified or qualification not established.

L = A limiting condition with respect to qualification in that the qualified life has not been established by the Licensee.

O = NRC Qualification Category.

R = Replacement of the Equipment by the Licensee is planned.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION

IEB-79-01B

FRC TASK	REACTOR TYPE	PLANT NAME	PAGE
04.11	BWR	DRESDEN 3	1

PROJECT	UTILITY
02G-C5417-01	COMMONWEALTH EDISON

DOCKET	NRC TAC	DATE/ENGINEER
50-249	42487	12/15/80 SRS

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																		
	1	2	3	4	5	6A	6B	7	8	9A	9B	10	11	12	13	14	15	16	17	18
GUIDELINE REQUIREMENTS. (DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																				
EVIDENCE OF QUALIFICATION	X	X								X		X			X	X	X	X		
RELATIONSHIP TO TEST SPECIMEN	X	X								X		X			X	X				
AGING DEGRADATION EVALUATED	X	X				X	X		X	X		X			X	X				
QUALIFIED LIFE ESTABLISHED	X	X				X	X	X	X	X		X		X	X	X				
PROGRAM TO IDENTIFY AGING	X	X				X	X		X	X		X			X	X				
QUAL. FOR STEAM EXPOSURE	X	X								X		X			X	X				
PEAK TEMPERATURE ADEQUATE	X	X								X		X		X	X	X				
PEAK PRESSURE ADEQUATE														X	X	X				
TEST DURATION ADEQUATE	X	X				X	X		X	X		X			X	X				
REQUIRED PROFILE ENVELOPED	X	X				X	X		X	X		X		X	X	X				
QUAL. FOR SUBMERGENCE																				
QUAL. FOR CHEMICAL SPRAY																				
QUAL. FOR RADIATION						X	X	X	X	X		X		X						
BETA RADIATION CONSIDERED																				
TEST SEQUENCE	X	X				X	X			X		X			X	X				
TEST DURATION (1 HOUR + FUNCTION)	X	X				X	X		X	X		X			X	X	X	X		
QUANTITY OF EQUIPMENT	8	2	2	2	2	2	10	2	4	2	1	4	10	3	1	1	2	2	1	1
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY. O — CATEGORY DESIGNATION																				
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE																				
IV-B. QUAL. NOT ESTABLISHED		O	O	O	O		O	O	O	O		O	O	C	O	O	O	O		
V. EQUIP. NOT QUALIFIED	O					O														
VI. QUAL. IS DEFERRED											O								C	O
REPLACEMENT SCHEDULE						R														

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FRC TASK	REACTOR TYPE	PLANT NAME	PAGE
04.11	BWR	DRESDEN 3	2

PROJECT	UTILITY
02G-C5417-01	COMMONWEALTH EDISON

EQUIPMENT ENVIRONMENTAL QUALIFICATION

IEB-79-01B

DOCKET	NRC TAC	DATE/ENGINEER
50-249	42487	12/15/80 SRS

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																		
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
GUIDELINE REQUIREMENTS,	(DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																			
EVIDENCE OF QUALIFICATION	X		X															X	X	X
RELATIONSHIP TO TEST SPECIMEN																		X		
AGING DEGRADATION EVALUATED													X	X	X	X		X		
QUALIFIED LIFE ESTABLISHED													X	X	X	X		X		
PROGRAM TO IDENTIFY AGING													X	X	X	X	X	X		
QUAL. FOR STEAM EXPOSURE																		X		
PEAK TEMPERATURE ADEQUATE																		X		
PEAK PRESSURE ADEQUATE																		X		
TEST DURATION ADEQUATE															X	X		X		
REQUIRED PROFILE ENVELOPED															X	X		X		
QUAL. FOR SUBMERGENCE																				
QUAL. FOR CHEMICAL SPRAY																				
QUAL. FOR RADIATION													X	X						
BETA RADIATION CONSIDERED																				
TEST SEQUENCE													X	X			X	X		
TEST DURATION (1 HOUR + FUNCTION)	X		X										X	X				X	X	X
QUANTITY OF EQUIPMENT	2	1	16	1	1	1	1	4	1	3	7	1	4	4	1	4	1	1	16	16
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY,	O — CATEGORY DESIGNATION																			
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE																				
IV-B. QUAL. NOT ESTABLISHED	O		O												O	O	O	O	O	O
V. EQUIP. NOT QUALIFIED													O	O						
VI. QUAL. IS DEFERRED		O		O	O	O	O	O	O	O	O	O								
REPLACEMENT SCHEDULE											-		R	R						

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EQUIPMENT ENVIRONMENTAL QUALIFICATION	FRC TASK 04.11	REACTOR TYPE BWR	PLANT NAME DRESDEN 3	PAGE 3
IEB-79-01B	PROJECT 02G-C5417-01		UTILITY COMMONWEALTH EDISON	
	DOCKET 50-249	NRC TAC 42787	DATE/ENGINEER 12/15/80 SRS	

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																		
	39	40		42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
GUIDELINE REQUIREMENTS,	(DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																		
EVIDENCE OF QUALIFICATION	X	X								X		X				X	X	X	X	X
RELATIONSHIP TO TEST SPECIMEN		X								X		X							X	X
AGING DEGRADATION EVALUATED		X		X				X		X	X	X			X				X	X
QUALIFIED LIFE ESTABLISHED		X		X	X		X	X	X	X	X	X	X	X	X				X	X
PROGRAM TO IDENTIFY AGING		X		X				X		X	X	X			X				X	X
QUAL. FOR STEAM EXPOSURE																			X	
PEAK TEMPERATURE ADEQUATE	X	X								X		X							X	X
PEAK PRESSURE ADEQUATE																			X	
TEST DURATION ADEQUATE		X								X	X	X			X				X	X
REQUIRED PROFILE ENVELOPED		X								X	X	X			X				X	X
QUAL. FOR SUBMERGENCE																				
QUAL. FOR CHEMICAL SPRAY																				
QUAL. FOR RADIATION		X					X			X	X	X			X					X
BETA RADIATION CONSIDERED																				
TEST SEQUENCE		X																		
TEST DURATION (1 HOUR + FUNCTION)						X							X	X		X	X	X	X	
QUANTITY OF EQUIPMENT	4	4		4	4	6	2	4	2	6	2	8	2	2	2	2	6	4	4	2
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY,	O — CATEGORY DESIGNATION																			
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE																				
IV-B. QUAL. NOT ESTABLISHED	O	O		O	O	O	O	O	O	O		O	O	O		O	O	O	O	O
V. EQUIP. NOT QUALIFIED											O				O					
QUAL. IS DEFERRED																				
REPLACEMENT SCHEDULE											R				R					

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EQUIPMENT ENVIRONMENTAL QUALIFICATION

IEB-79-01B

FRC TASK	REACTOR TYPE	PLANT NAME	PAGE
04.11	BWR	DRESDEN 3	4

PROJECT	UTILITY
02G-C5417-01	COMMONWEALTH EDISON

DOCKET	NRC TAC	DATE/ENGINEER
50-249	42487	12/15/80 SAS

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																		
	57	60	61	62	62B	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
GUIDELINE REQUIREMENTS, (DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																				
EVIDENCE OF QUALIFICATION	X	X	X	X	X	X	X	X		X	X	X	X	X		X				
RELATIONSHIP TO TEST SPECIMEN						X										X				
AGING DEGRADATION EVALUATED						X			X							X				
QUALIFIED LIFE ESTABLISHED						X			X							X				
PROGRAM TO IDENTIFY AGING						X			X							X				
QUAL. FOR STEAM EXPOSURE																				
PEAK TEMPERATURE ADEQUATE							X	X		X	X	X	X	X		X				
PEAK PRESSURE ADEQUATE																				
TEST DURATION ADEQUATE																X				
REQUIRED PROFILE ENVELOPED						X										X				
QUAL. FOR SUBMERGENCE																				
QUAL. FOR CHEMICAL SPRAY																				
QUAL. FOR RADIATION						X		X		X	X	X	X	X		X				
BETA RADIATION CONSIDERED																				
TEST SEQUENCE																				
TEST DURATION (1 HOUR + FUNCTION)	X	X	X	X	X		X													
QUANTITY OF EQUIPMENT	4	1	12	6	3	2	5	2	2	2	2	2	2	2	2	2	1	2	1	2
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY, O — CATEGORY DESIGNATION																				
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE																				
IV-B. QUAL. NOT ESTABLISHED	O	O	O	O	O		O		O							O				
V. EQUIP. NOT QUALIFIED						O		O		O	O	O	O	O						
VI. QUAL. IS DEFERRED															O		O	O	O	O
REPLACEMENT SCHEDULE					R	R		R		R	R	R	R							

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FRC TASK	REACTOR TYPE	PLANT NAME	PAGE
04.11	BWR	DRESDEN 3	5

PROJECT	UTILITY
02G-C5417-01	COMMONWEALTH EDISON

EQUIPMENT ENVIRONMENTAL QUALIFICATION

IEB-79-01B

DOCKET	NRC TAC	DATE/ENGINEER
50-249	42787	12/15/82 SKS

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																		
	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
GUIDELINE REQUIREMENTS, (DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																				
EVIDENCE OF QUALIFICATION			X			X		X	X	X	X	X	X	X	X	X		X	X	
RELATIONSHIP TO TEST SPECIMEN						X														
AGING DEGRADATION EVALUATED						X														
QUALIFIED LIFE ESTABLISHED		X			X	X	X										X			
PROGRAM TO IDENTIFY AGING						X														
QUAL. FOR STEAM EXPOSURE						X														
PEAK TEMPERATURE ADEQUATE		X				X														X
PEAK PRESSURE ADEQUATE		X				X														
TEST DURATION ADEQUATE						X														
REQUIRED PROFILE ENVELOPED		X				X														
QUAL. FOR SUBMERGENCE																				
QUAL. FOR CHEMICAL SPRAY																				
QUAL. FOR RADIATION						X														X
BETA RADIATION CONSIDERED																				
TEST SEQUENCE					X	X	X										X			
TEST DURATION (1 HOUR + FUNCTION)			X			X		X	X	X	X	X	X	X	X	X		X	X	X
QUANTITY OF EQUIPMENT	1	2	3	3	1	2	1	10	2	2	5	5	7	4	4	3	1	1	2	4
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY, O — CATEGORY DESIGNATION																				
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE																				
IV-B. QUAL. NOT ESTABLISHED		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
V. EQUIP. NOT QUALIFIED																				
QUAL. IS DEFERRED	O																			
REPLACEMENT SCHEDULE																				

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EQUIPMENT ENVIRONMENTAL QUALIFICATION

IEB-79-01B

FRC TASK	REACTOR TYPE	PLANT NAME	PAGE
04.11	BWR	DRESDEN 3	6

PROJECT	UTILITY
02G-C5417-01	COMMONWEALTH EDISON

DOCKET	NRC TAC	DATE/ENGINEER
50-249	42487	12/15/80 SRS

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																		
	98	99	100	101	102	103	104	105	106	107	108	109	110A/B	103	111	112	113	114	115	116
GUIDELINE REQUIREMENTS,	(DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																			
EVIDENCE OF QUALIFICATION		X	X	X	X		X	X			X		X							
RELATIONSHIP TO TEST SPECIMEN				X							X		X							
AGING DEGRADATION EVALUATED				X							X		X							
QUALIFIED LIFE ESTABLISHED				X		X					X		X							
PROGRAM TO IDENTIFY AGING				X							X		X							
QUAL. FOR STEAM EXPOSURE				X																
PEAK TEMPERATURE ADEQUATE				X																
PEAK PRESSURE ADEQUATE				X																
TEST DURATION ADEQUATE				X																
REQUIRED PROFILE ENVELOPED				X																
QUAL. FOR SUBMERGENCE																				
QUAL. FOR CHEMICAL SPRAY																				
QUAL. FOR RADIATION	X	X		X							X		X							
BETA RADIATION CONSIDERED																				
TEST SEQUENCE				X																
TEST DURATION (1 HOUR + FUNCTION)			X	X	X		X	X												
QUANTITY OF EQUIPMENT	10	2	4	8	4	1	2	4	3	2	2	2	6	4	2	2	2	2	2	8
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY,	O — CATEGORY DESIGNATION																			
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE																				
IV-B. QUAL. NOT ESTABLISHED	O		O	O	O	O	O	O			O		O							
EQUIP. NOT QUALIFIED		O																		
QUAL. IS DEFERRED									O	O		O		O	O	O	O	O	O	O
REPLACEMENT SCHEDULE		R																		

Franklin Research Center
A Division of The Franklin Institute
The Benjamin Franklin Parkway, Phila., Pa. 19103

EQUIPMENT ENVIRONMENTAL QUALIFICATION

IEB-79-01B

FRC TASK	REACTOR TYPE	PLANT NAME	PAGE
04.11	BWR	DRESDEN 3	7

PROJECT	UTILITY
02G-C5417-01	COMMONWEALTH EDISON

DOCKET	NRC TAC	DATE/ENGINEER
50-249	42457	12/15/80 SAS

SUMMARY REVIEW	EQUIPMENT ITEM NUMBER																			
	117	118	119	120	121	122	123	124	125	126	127	128	129	130						
GUIDELINE REQUIREMENTS,	(DESIGNATIONS: X — DEFICIENCY, L — LIMITING CONDITION)																			
EVIDENCE OF QUALIFICATION					X	X	X	X	X	X	X	X	X	X						
RELATIONSHIP TO TEST SPECIMEN					X		X	X	X	X		X	X	X						
AGING DEGRADATION EVALUATED					X		X	X	X	X		X	X	X						
QUALIFIED LIFE ESTABLISHED					X		X	X	X	X		X	X	X						
PROGRAM TO IDENTIFY AGING					X		X	X	X	X		X	X	X						
QUAL. FOR STEAM EXPOSURE					X		X	X	X	X		X	X	X						
PEAK TEMPERATURE ADEQUATE					X		X	X	X	X		X	X	X						
PEAK PRESSURE ADEQUATE					X		X	X	X	X		X	X	X						
TEST DURATION ADEQUATE					X		X	X	X	X		X	X	X						
REQUIRED PROFILE ENVELOPED					X		X	X	X	X		X	X	X						
QUAL. FOR SUBMERGENCE									X	X		X	X	X						
QUAL. FOR CHEMICAL SPRAY									X	X		X	X	X						
QUAL. FOR RADIATION							X	X	X	X		X	X	X						
BETA RADIATION CONSIDERED							X	X	X	X		X	X	X						
TEST SEQUENCE							X	X	X	X		X	X	X						
TEST DURATION (1 HOUR + FUNCTION)					X	X	X	X	X	X	X	X	X	X						
QUANTITY OF EQUIPMENT	1	2	4	5	2	4	5	5	1	2	1	16	4	4						
EQUIPMENT INSPECTED AT SITE																				
QUALIFICATION CATEGORY,	O — CATEGORY DESIGNATION																			
I-A. QUAL. FOR PLANT LIFE																				
I-B. QUAL. BY JUDGEMENT																				
II-A. QUAL. FOR < PLANT LIFE																				
II-B. QUAL. PENDING MODIFICATION																				
II-C. QUAL. < PLANT LIFE/FRC REVIEW																				
III. EXEMPT FROM QUAL.																				
IV-A. QUAL. TEST SCHEDULE							O	O	O	O										
IV-B. QUAL. NOT ESTABLISHED					O	O					O	O								
V. EQUIP. NOT QUALIFIED													O	O						
QUAL. IS DEFERRED	O	O	O	O																
REPLACEMENT SCHEDULE													R	R						

6. REFERENCES

QUALIFICATION REFERENCES

1. FSAR Section 10.11
2. Bechtel Radiation Study
3. Report Section 4.3.6
4. FSAR Figures 5.2.11 and 5.2.12
5. FSAR Section 6.2.3.2
6. Report No. 338164-FC2485-01 Tests of Limitorque Valve Operator and Motor-Brake Assembly, Both with Class B Insulation Under Simulated Reactor Containment Post Accident Steam and Chemical Environment
7. Special Report No. 37, Revision 1, February, 1975
8. Report Section 4.2.6
9. Report No. 600461-B0003, Qualification Type Test Report - Limitorque Valve Actuators for Class IE Service Outside Primary Containment
10. Report No. 600426-B0009, Qualification Type Test Report - Limitorque DC Valve Actuators. Only the motor was thermally aged. Limitorque uses these units at temperatures of 300°F continuously. Therefore, aging was considered necessary for the motors only.
11. FSAR Figure 8.2.3
12. FSAR Figure 8.2.5
13. FSAR Section 6.2.7.2.D
14. FSAR Figures 5.2.11 and 5.2.12 and FSAR Table 5.2.1
15. FSAR Section 6.2.4.2.B
16. PEP No. 42963 Project Engineer Program Test - Dresser Relief Valve Actuator
17. FSAR Table 5.2.2
18. 9306-P04156 report of test on Magnetrol Level Switch A-153-FEPLUPX-Y-TOM-S1M3H
19. Report No. 600456-B0009, Qualification Type Test Report - Limitorque DC Valve Actuators
20. FSAR Section 6.2.4.2.6
21. FSAR Section 6.5
22. FSAR Figures 5.2.10 and 5.2.11

23. Report No. DV145C3031, Qualification Design Verification File, Yarway 4418C

24. DV145C3006, Qualification Design Verification File GE/MAC 551

25. Report Section 4.4

26. WCAP-7410-L

27. DV145C3009, Design Verification File with Barton Report TP-199-4 for Barton Pressure Switch, General Electric

28. DV145C3008, Qualification Design Verification File, General Electric

29. Calibration Procedure DIS 2300-7

30. FIRL Test Report F-C2667

31. DV145C3010, Qualification Design Verification File, General Electric

32. Lockheed Electronics Co. Report No. 5628-3509, Test on Yarway 4418 TC Level Switch

33. Test Report AQS21678/TR, Revision A, Qualification Tests of Solenoid Valves by Environmental Exposure

OTHER REFERENCES

34. Memorandum for E. L. Jordan, NRC, through G. Fiorelli, NRC, for D. W. Hayes, NRC, dated May 23, 1980. Subject: Screening review of Licensee response to IE 79-01B and summary of inspection of installed systems at Dresden Unit 3.

35. Letter from G. Lainas, NRC, to A. Schwencer, NRC. Subject: Electrical Equipment Environmental Qualification, dated February 19, 1980.

36. Letter from Norman C. Moseley, NRC, to B. H. Grier, J. P. O'Reilly, J. G. Keppler, K. V. Seyfrit, R. H. Engelken, NRC. Subject: 1E Supplement No. 2 to Bulletin 79-01B, Environmental Qualification of Class 1E Equipment, dated September 29, 1980.

37. Letter from Norman C. Moseley, NRC, to B. H. Grier, J. P. O'Reilly, J. G. Keepler, K. V. Seyfrit, R. H. Engelken, NRC. Subject: 1E Supplement No. 3 to Bulletin 79-01B, Environmental Qualification of Class 1E Equipment, dated October 24, 1980.

38. U.S. NRC Memorandum and Order (CLI-80-21) pursuant to the Petition for Emergency and Remedial Relief files with the NRC on November 4, 1977.

39. NUREG-0588, Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment, dated December 1979.

40. Commonwealth Edison Co. response to IE Bulletin 79-01B for Dresden Nuclear Power Station Unit 3, dated November 5, 1980.

APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

The Licensee has provided detailed information concerning environmental zones and expected environmental service conditions in all locations within the plant. Figures A-1 and A-2 show the inside Containment profile envelopes provided by the Licensee.

Dresden 3 has a demineralized water spray system rather than a chemical spray system inside containment. This is considered in the Licensee's analysis.

The specific environmental service conditions corresponding to plant zones are shown in Tables A-1 through A-3.

The Licensee states that, where environmental conditions are maintained by HVAC equipment, the HVAC system is provided with redundant components and/or a backup power supply for reliable operation. Safety-related HVAC systems are provided for the following areas:

a. Control room, cable spreading room, battery room, computer room, and electrical equipment room.

b. Standby diesel generator room.

c. High-pressure coolant injection room.

d. Low-pressure coolant injection corner rooms.

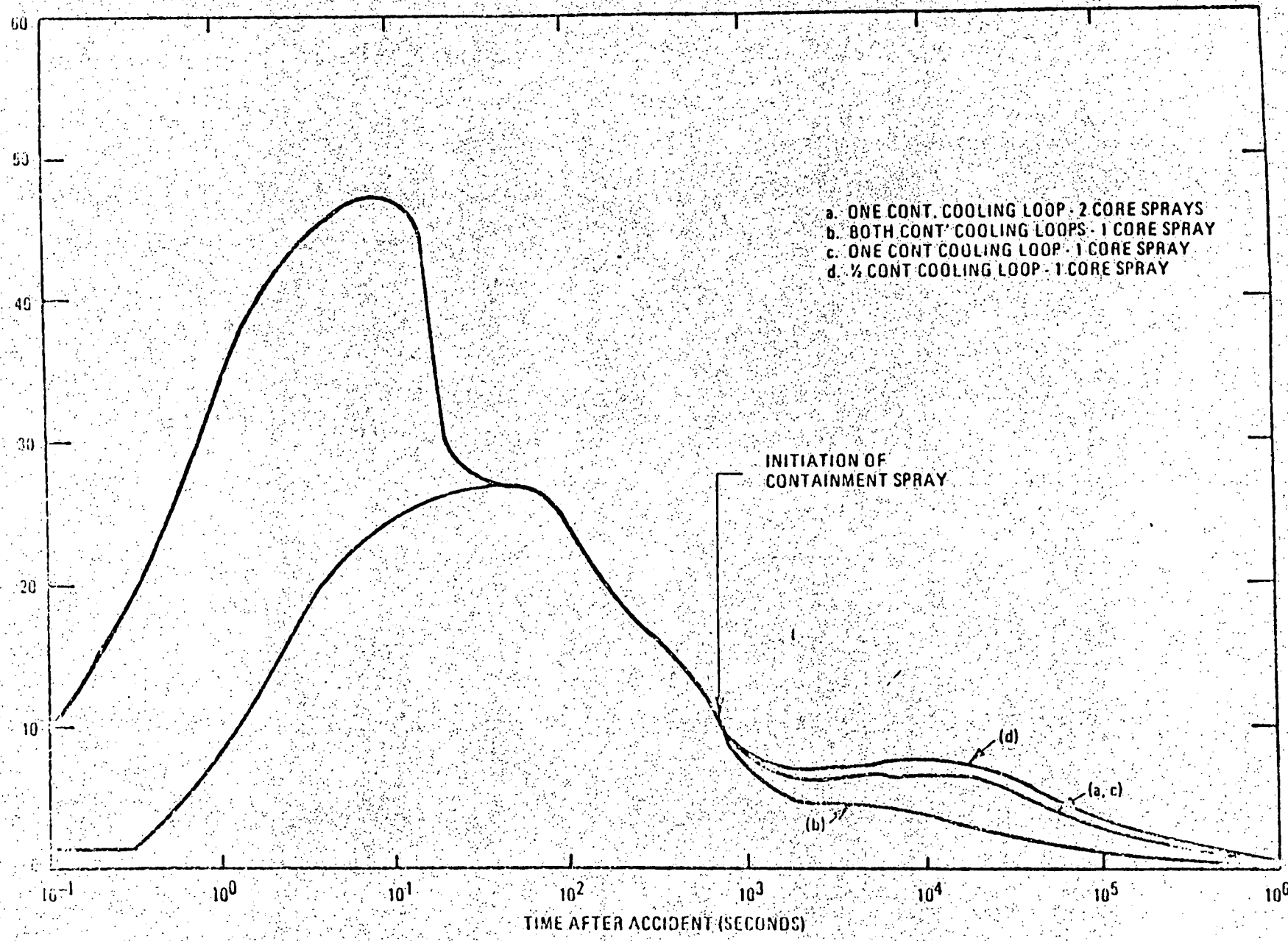

Figure A-1. Pressure Response to Loss-of-Coolant Accident

FIGURE SUPPLIED BY THE LICENSEE

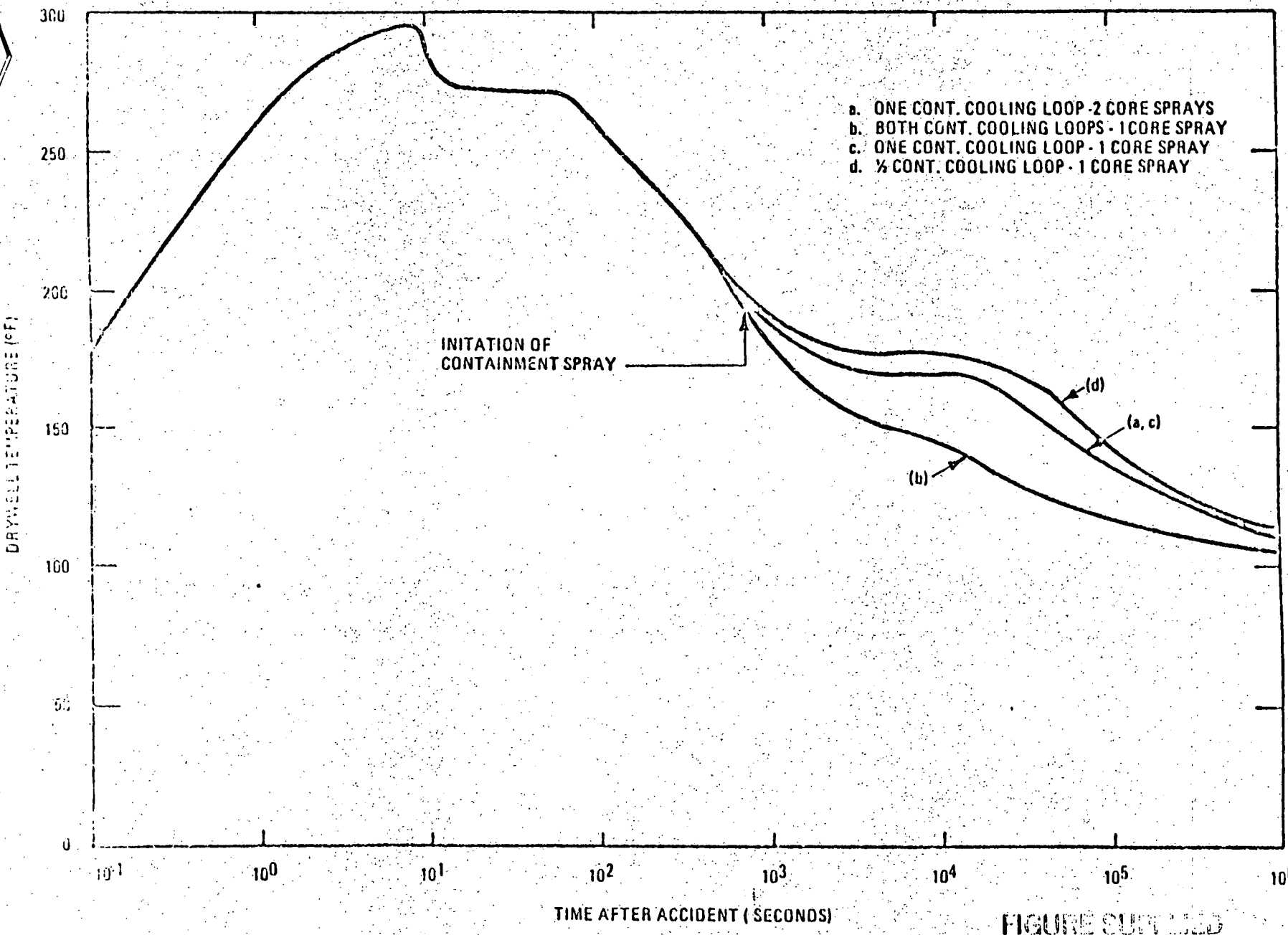

Figure A-2. Temperature Response to Loss-of-Coolant Accident

FIGURE SUPPLIED BY THE LICENSEE

Table A-1. Maximum Environmental Conditions Inside the Drywell Following the Postulated LOCA

Temperature	Pressure	Relative Humidity	Containment Spray	Gamma Radiation	Submergence Elevation
281F	63 psia	100%	Demineralized water	1 day-4.3×10^7 rads 30 day-1×10^8 rads 1 year-1.1×10^8 rads	505'-6"

FIGURE SUPPLIED BY THE LICENSEE

Table A-2. Maximum Environmental Conditions Outside the Drywell Following the Postulated HELB

Area	Pipe Break	Maximum Pressure (psia)	Maximum Temperature (°F)	Relative Humidity (%)
Torus compartment (region of postulated HPCI line break)	High-pressure coolant injection steam	27.0	242	100
Reactor building pipe chase, el 589'-0", 570'-0", and 545'-6" south of drywell between Columns L and M near Column 41; and isolation condenser area	Isolation condenser	27.0	242	100
Steam tunnel	Main steam/ feedwater	27.0	242	100
Reactor water cleanup heat exchanger and holding pump room	Reactor water cleanup	Not evaluated - Only containment isolation valves required to function. Qualification will meet conservatively assumed drywell LOCA conditions.		
High-pressure heater bay	Main steam/ feedwater	Not evaluated - No equipment which is required to function is located in this area.		
Turbine Building el 538'-0", north of Column G, between Columns 40 and 42 and 46 and 48	Main steam	Not evaluated - No equipment which is required to function is located in this area.		
Reactor feed pump room	Feedwater	Not evaluated - No equipment which is required to function located in this room		
Diesel generator room	Feedwater	Not evaluated - Qualification for the environment due to a postulated feedwater line break is not required since three diesels are available to provide emergency ac power.		

FIGURE SUPPLIED BY THE APPLICANT

Table A-3. Radiation Environmental Conditions Outside Drywell Following the Postulated LOCA Maximum Radiation Sources

Area	Source*	Integrated Dose Levels (rads) 1 Day	30 Days	1 Year
Torus	SP	1.5×10^7	3.2×10^7	3.9×10^7
Low-pressure coolant injection corner rooms	SP	2.4×10^5	9.4×10^5	1.7×10^6
High-pressure coolant injection room	MS	6.6×10^6	1.6×10^7	1.7×10^7
Steam tunnel	SP	1.9×10^5	7.0×10^5	1.3×10^6
Reactor building el 517'-6"	RW	2.5×10^6	7.8×10^6	1.4×10^7
Reactor building el 545'-6"	CA/SP	2.2×10^5	6.2×10^5	1.1×10^6
Reactor building el 570'-0"	CA	2.2×10^5	5.4×10^5	6.1×10^5
Reactor building el 589'-0"	RW	3.2×10^6	1.1×10^7	1.8×10^7

* SP = Suppression pool liquid
RW = Reactor water
RS = Reactor steam
CA = Containment airborne

FIGURE SUPPLIED BY THE LICENSEE

APPENDIX B - EQUIPMENT ITEM TABLE

This appendix contains the list of safety-related electrical items for the Dresden Nuclear Generating Station Unit 3 provided by the Licensee in his November, 1, response to IE Bulletin 79-01B. This listing shows the equipment items by manufacturer and model number, plant location, and time required to function as identified by the Licensee.

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
1	Temperature Switches No Manufacturer or Model Number	RWCU Room	1-6	3,25
2	Motor-Driven Pump GE 5106338XC23A 5K6637XC71A	SE and SW Corner Rooms	7-10	3,25
3	Motor-Operated Valve Limitorque (Peerless) SMB-0-15	Torus Area	11-13	3,26
4	Motor-Operated Valve Limitorque (Peerless) SMB-0-15	Torus Area	14-16	3,26
5	Motor-Operated Valve Limitorque (Reliance) SMB-1 SMB-2-40	Secondary Containment	17-22	3,9,25
6A,B	Flow Switch Barton 288	SE and SW Corner Rooms	34-36, 372-377	3,25,27
7	Motor-Operated Valve Limitorque (Reliance) SMB-000	Secondary Containment	23-25	9
8	Pressure Transmitter GE 4532K-11001	SE and SW Corner Rooms	26-29, 69, 80	3,24,25
9	Flow Transmitter GE A: 4532K-11001 B: 4532K13001	SE and SW Corner Rooms	30-34, 68	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
10	Pressure Switch Static-O-Ring 5N-AA3	SE and SW Corner Rooms	37-41	3,25
11	Motor-Operated Valve Limitorque (Peerless) SMB-2-100 SMB-0-25 SMB-2-80 SMB-000-5 SMB-2-150	HPCI Room	42, 47, 50-56, 59	1,3,25
12	Motor-Operated Valve Limitorque (Reliance) SMB-1-60 SMB-2-60 SMB	Inside Drywell	43-44, 455-456, 461-462	9
13	Motor-Operated Valve Limitorque (Peerless) SMB-2-100	Secondary Containment	45, 46	3,25
14	Motor-Operated Valve Limitorque (Peerless) SMB-2-80	Steam Tunnel	48, 49	25
15	Solenoid Valve No Manufacturer or Model Number	HPCI Room	57, 58	3,25
16	Solenoid Valve ASCO HT8320	HPCI Room	60, 61	3,25
17	Solenoid for Turbine Stop Valve No Manufacturer or Model Number	HPCI Room	62	3,25
18	Turbine Gland Seal Condenser Drain Pump GE 5B225A3525	HPCI Room	63	1,3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
19	Differental Pressure Indicating Switch Barton 288	Secondary Containment	64-66	3,25
20	Motor Speed Changer GE Type M-304-A SN 138347	HPCI Room	67	3,25
21	Temperature Switch United Electric Controls Type F-7 76B	HPCI Room	70-79	3,25
22	Motor Gear Unit GE 5CD14D19A111620	HPCI Room	81	3,25
23	Emergency Oil Pump Motor-Driven GE 5CD218E252	HPCI Room	82	3,25
24	Auxiliary Oil Pump GE 5CB326E765	HPCI Room	83	3,25
25	Gland Steam Exhauster GE Fan 5BC74AV2193	HPCI Room	84	3,25
26	Pressure Switch Barksdale B2T-12SS-GE	HPCI Room	85-87	3,25
27	HPCI Motor Control Signal Converter No Manufacturer or Model Number	HPCI Room	88	3,25
28	Pressure Switch Mercoid 443132R26E DA 7043-804	HPCI Room	89, 93, 94	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
29	Level Switch Magnetrol 291 402	Torus Area	90, 91, 95-98	3,25
30	Flow Switch Barton 289	HPCI Room	92	3,25,28
31	MSIV and Solenoid for Air Operator Automatic Valve Co. C5512	Inside Drywell	99-102	16,25
32	MSIV and Solenoid For Air Operator Automatic Valve Co. C5512	Steam Tunnel	99, 103, 104	16,25
33	Safety Relief Valve and Solenoid Dresser Industries C5450-5	Inside Drywell	105, 106	16,25
34	Electromatic Relief Valve and Solenoid Dresser Industries Type 1525VX	Inside Drywell	107-110	16,25
35	Motor-Operated Valve Limitorque (Peerless) SMB-00-7.5	Inside Drywell	111, 112	6,26
36	Motor-Operated Valve Limitorque (Peerless) SMB-00-7.5	Steam Tunnel	113, 114	25
37	Differential Pressure Indicating Switch Barton 278/224	SW Corner Room	115-124	3,25
38	Temperature Switch United Election Type F7, Model 76B	Steam Tunnel	125-134	25,29

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
39	Motor-Driven Pump GE 5K6637XC71A	Secondary Containment	135-137	3,25
40	Motor-Driven Pump GE No Model Number	SE and SW Corner Rooms	138-142	3,25
41	Deleted			
42	Motor-Operated Valve Limitorque (Peerless) SMB-00-15	SE and SW Corner Rooms	143-146	3,6,26
43	Motor-Operated Globe Limitorque (Reliance) SMB-1-40 SMB-1	SE and SW Corner Rooms	147, 148, 167-168	9
44	Motor-Operated Valve Limitorque (Peerless) SMB-000-2 SMB-00-10 SMB-000-5 SMB-4	Torus Area	149-157, 161-162	3,6,26
45	Motor-Operated Valve Limitorque (Reliance) SMB5T-150	Secondary Containment	158-160	3,9
46	Motor-Operated Valve Limitorque (Peerless) SMB-0-15	Secondary Containment	163-166	3,25,26
47	Motor-Operated Valve Limitorque SMB	SE and SW Corner Rooms	169-171	9
48	Flow Transmitter GE 4532K-13001	SE and SW Corner Rooms	172-175, 179-186	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
49	Differential Pressure Transmitter Barton 368	SE and SW Corner Rooms	176, 178	3,30
50	Pressure Switch Static-O-Ring 5N-AA3	SE and SW Corner Rooms	187-193	3,25
51	Motor-Operated Valve Limitorque (Reliance) SMB-2-80	Torus Area	194, 195	9
52	Motor-Operated Valve Limitorque (Peerless) SMB-3	Torus Area	196-198	3,6,26
53	Flow Switch Barton 289	SE and SW Corner Rooms	199-201	3,25,28
54	Motor-Operated Valve Limitorque SMB-000-5	Torus Area	202, 321	3,25
55	Solenoid Valve ASCO HT831614	Torus Area	203-205, 207, 208	3,25
56	Solenoid Valve ASCO 8317A29 8320A19	Secondary Containment	206, 209-212	3,25
57	Solenoid Valve ASCO LB831454	Steam Tunnel	213-215	25
58	Differential Pressure Static-O-Ring 12R2-KK815-V	SE and SW Corner Rooms	216-218	3,25
59	Pressure Switch Barksdale D2X-H18-UL	Secondary Containment	219-221	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
60	Pressure Switch Meletron No Model Number	Secondary Containment	222	3,25
61	Pressure Switch Static-O-Ring 12N-K4 12N-AA5	Secondary Containment	223-227, 228-230	3,25
62	Solenoid Valve Versa A: VPS 2402 B: VGS 4422 VGS 4522	Secondary Containment	231-238	3,25
63	Electric Air Heater E. L. Weigland 1-113462 2-113462	Secondary Containment	240-242	3,25
64	Motor-Operated Damper Limitorque SMB-00-15	Secondary Containment	239, 243-246	3,25
65	Exhaust Fan GE 5K256AK2037	Secondary Containment	247-249	3,25
66	Motor Operated Damper Limitorque (Reliance) H-3BC	Secondary Containment	250, 251	3,9,25
67	Temperature Switch High No Manufacturer or Model Number	Secondary Containment	252-254	3,25
68	Flow Transmitter Foxboro 15-A-1	Secondary Containment	255-257	3,25
69	Flow Switch McDonnel AF-2	Secondary Containment	258-260	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
70	Flow Switch Mercoid PPQW	Secondary Containment	261-263	3,25
71	Local Panel No Manufacturer or Model Number	Secondary Containment	264-266	3,25
72	Diesel Generator Cooling Water Pump Crane Chempump GPS-75L-46H-3T	Diesel Room 3	267-269	3,25
73	Reactor Bldg. Emergency Air Cooler GE 5K184AL2561	Secondary Containment	270-273	3,25
74	HPCI Bldg. Emergency Air Cooler GE 5K182AL2591	Secondary Containment	274	3,25
75	Diesel Oil Transfer Pump GE 5K182BL6239	DG Room Units 2 & 3	275-277	3,25
76	Level Switch Magnetrol A-103F	Unit 3 DG Room, Day Tank Room	278-279	3,18,25
77	Solenoid Valve No Manufacturer or Model Number	Unit 3 DG Room Day Tank Room	280-283	3,25
78	Level Switch Magnetrol A-103F-EP/VP	DG Room 2/3 in Day Tank Room	284-285	3,18,25
79	Motor-Operated Valve Limitorque (Reliance) SMB-2-60	Inside Drywell	286-288	9

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
80	Motor-Operated Valve Limitorque (Peerless) SMB-2-60	Secondary Containment, Shutdown Cooling Pump Room	289-291	3,25
81	Motor-Operated Valve Limitorque (Reliance) SMB-2-60, SMB-2-40	Torus Area	292-294, 320	9
82	Motor-Operated Valve Limitorque (Peerless) SMB-1-25	Inside Drywell	295, 296	6,26
83	Motor-Operated Valve Limitorque (Peerless) SMB-1-40	Secondary Containment	297-299	3,25
84	Motor-Operated Valve Limitorque SMB-000-5	Inside Drywell	300-301	6,26
85	Solenoid Valve ASCO 91768D 694615 WPAT-8300B61F 831614	Secondary Containment	304-309, 463-464	3,25
86	Position Switch Namco Snap-Lock Mark II D1200G	Secondary Containment	302-303	3,25
87	Position Switch No Manufacturer or Model Number	Torus Area	310,311	3,25
88	Solenoid Ball Valve No Manufacturer or Model Number	Secondary Containment	312-315	3,25
89	Squib Shear Valve No Manufacturer or Model Number	Secondary Containment	316-319	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
90	Solenoid Valve ASCO HVA90-405-2A 94473P1/P2	Outside Primary Containment	322, 323, 334-336	3,25
91	Solenoid Valve ASCO 3384-8-R	Secondary Containment	324-327	3,25
92	Level Switch Magnetrol 402	TIP Room	328-330	3,25
93	Position Switch Namco Snap-Lock Mark II D1200G	TIP Room	331-333	3,25
94	Motor-Operated Valve Limitorque (Peerless) SMB-000-5	Steam Tunnel	337, 338	6,26
95	Solenoid Valve ASCO WPH8300B61F	Secondary Containment	339	3,25
96	Pressure Switch Meletron 372-665-49A	Secondary Containment	340-341	3,25
97	Pressure Switch Barksdale B2T-M12SS-GE	Secondary Containment	342-344	3,25,31
98	Level Indicating Switch Yarway 4418C	Secondary Containment	345-350	3,25,32
99	Level Indicating Transmitting Switch Yarway 4418CE	Secondary Containment	351-353	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
100	Pressure Switch Barksdale B2T-M12SS-GE	Secondary Containment	354-356	3,25
101	Motor-Operated Valve Limitorque SMB	Inside Drywell	357-368	None
102	Differential Pressure Indicating Switch Barton 288	Secondary Containment	369-371	3,25
103	Solenoid Valve ASCO 206-380-3F	Inside Drywell	378-379	33
104	Radiation Element Sensor and Converter GE GEK-802-D	Secondary Containment	380-382	3,25
105	Solenoid Valve Versa No Model Number	Ventilation Room	383-385	3,25
106	Isolation Damper and Solenoid Valves (2) Johnson Service V6183	Units 2/3 DG Room	386-388	3,25
107	Standby Diesel Generator General Motors A-20-C1	Outside Primary Containment	400-402	3,25
108	4.16-kV Switchgear GE Magneblast Breakers AMH 4.26-250	Secondary Containment	403-405	3,25
109	480-V Switchgear GE AKD5	Secondary Containment	406-407	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
110A,B	480-V Motor Control Center GE 7700	Secondary Containment	408-412, 433-435	3,25
111	Diesel Generator Excitation Cabinet Vickers Inc. 35D 870-2	Diesel Rooms 2/3 and 3	418-420	3,25
112	Diesel Generator Engine Control Panel General Motors S20 E4GW	Diesel Rooms 2/3 and 3	421-423	3,25
113	Diesel Generator Speed Sensing Panel General Motors S20 E4GW	Diesel Rooms 2/3 and 3	424-426	3,25
114	Diesel Generating Relay and Meter Panel Ideal Electric and Manufacturing Co. 265673	Diesel Rooms 2/3 and 3	427-429	3,25
115	4-kV Non-Segregated Phase Bus No Manufacturer or Model Number	Diesel Rooms 2/3 and 3	430-432	3,25
116	Battery Charger Gould GRF 240T100X Float Charger 24525F30	Battery Charger Room	436-437, 442-443, 450-452	3,25
117	250-V dc Motor Control Center Cutler Hammer Unitrol 95D9801ED745	Battery Charger Room	438	3,25
118	250-V dc Reactor Building Cutler Hammer Unitrol 3447-149	Secondary Containment	439-440	3,25

ITEM NO.	EQUIPMENT ITEM DESCRIPTION	LOCATION	LICENSEE SUBMITTAL PAGE REFERENCES	QUALIFICATION REFERENCES
119	Batteries Gould FPS-25 DPR-9	Battery Charger Room	441, 444, 448-449	3,25
120	DC Distribution Panel Cutler Hammer Unitrol 95D9801ED745 6CF643663	Battery Charger Room	445-447, 453-454	3,25
121	Motor-Operated Valve Limitorque (Peerless) SMB-4-200 SMB-1-60	Secondary Containment	457-460, 470,471	3,25
122	Differential Pressure Indicating Switch Barton 288-4235	Secondary Containment	465-470	3,25
123	Cable General Electric	Outside Drywell	471-472, 479-482, 487-488, 497-498	None
124	Cable Simplex	Outside Drywell	473-476, 489-494	None
125	Cable General Electric	Inside Drywell	477-478	None
126	Cable Simplex	Inside Drywell	483-486	None
127	Cable Newark Electric Co.	Outside Drywell	495-496	None
128	Electrical Penetrations GE-NEBS No Model No.	Inside Drywell	499-508	None
129	Terminal Blocks GE 264B965	Inside Drywell	509-512	None

130	Terminal Blocks Allen Bradley No Model Number	Inside Drywell	513-516	None

APPENDIX C - SAFETY SYSTEMS FOR WHICH ENVIRONMENTAL QUALIFICATION IS TO BE ADDRESSED

The Licensee has submitted a list of safety-related systems which must function in order to mitigate the consequences of a design basis accident. This information was submitted in response to IE Bulletin 79-01B and was included in the Licensee's November 1 response.

Reactor Protection System
Core Spray System
High-Pressure Coolant Injection System
Auto Depressurization System/Main Steam System
Low-Pressure Coolant Injection/Containment Spray System
Pressure Suppression System
Standby Gas Treatment System
Service Water System
Diesel Oil Piping System
Containment Isolation System*
Control Rod Drive Hydraulic System
Reactor (Nuclear Boiler) Recirculation System
Process Radiation Monitoring System
Reactor Building Ventilation System
Control Room, Office, and Drywell Air Conditioning
Standby Alternating Current Power
Standby Direct Current Power
Isolation Condenser System
General Use Electrical Equipment
Condensate and Feedwater System

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*Containment isolation includes all components in various systems performing the containment isolation function.

APPENDIX D - EQUIPMENT ITEM CROSS-REFERENCE LIST

EQUIPMENT ITEM NO.	FINAL TECHNICAL EVALUATION REPORT SECTION
1	4.6.1
2	4.5.2.1
3	4.5.2.2
4	4.5.2.2
5	4.5.2.3
6A	4.6.2
6B	4.5.2.4
7	4.5.2.5
8	4.5.2.6
9A	4.5.2.7
9B	4.7.1
10	4.5.2.8
11	4.5.2.9
12	4.5.2.10
13	4.5.2.11
14	4.5.4.12
15	4.5.2.13
16	4.5.2.14
17	4.7.2
18	4.7.3
19	4.5.2.15
20	4.7.4
21	4.5.2.16
22	4.7.5
23	4.7.6
24	4.7.7
25	4.7.8
26	4.7.9
27	4.7.10
28	4.7.11
29	4.7.12
30	4.7.13
31	4.6.3
32	4.6.4
33	4.5.2.17
34	4.5.2.17
35	4.5.2.18
36	4.5.2.19
37	4.5.2.20
38	4.5.2.21
39	4.5.2.22
40	4.5.2.23

EQUIPMENT ITEM NO.	FINAL TECHNICAL EVALUATION REPORT SECTION
41	deleted
42	4.5.2.24
43	4.5.2.25
44	4.5.2.26
45	4.5.2.27
46	4.5.2.28
47	4.5.2.29
48	4.5.2.30
49	4.6.5
50	4.5.2.31
51	4.5.2.32
52	4.5.2.33
53	4.6.6
54	4.5.2.34
55	4.5.2.35
56	4.5.2.37
57	4.5.2.36
58	4.5.2.38
59	4.5.2.39
60	4.5.2.40
61	4.5.2.41
62A	4.5.2.42
62B	4.5.2.43
63	4.6.7
64	4.5.2.44
65	4.6.8
66	4.5.2.45
67	4.6.9
68	4.6.10
69	4.6.11
70	4.6.12
71	4.6.13
72	4.7.14
73	4.5.2.46
74	4.7.15
75	4.7.16
76	4.7.17
77	4.7.18
78	4.7.19
79	4.5.2.47
80	4.5.2.48
81	4.5.2.49
82	4.5.2.50
83	4.5.2.51
84	4.5.2.52
85	4.5.2.53
86	4.5.2.54
87	4.5.2.55

EQUIPMENT ITEM NO.	FINAL TECHNICAL EVALUATION REPORT SECTION
88	4.5.2.56
89	4.5.2.57
90	4.5.2.58
91	4.5.2.59
92	4.5.2.60
93	4.5.2.61
94	4.5.2.62
95	4.5.2.63
96	4.5.2.64
97	4.5.2.65
98	4.5.2.66
99	4.6.14
100	4.5.2.67
101	4.5.2.68
102	4.5.2.69
103	4.5.2.70
104	4.5.2.71
105	4.5.2.72
106	4.7.20
107	4.7.21
108	4.5.2.73
109	4.7.22
110A	4.5.2.74
110B	4.7.23
111	4.7.24
112	4.7.25
113	4.7.26
114	4.7.27
115	4.7.28
116	4.7.29
117	4.7.30
118	4.7.31
119	4.7.32
120	4.7.33
121	4.5.2.75
122	4.5.2.76
123	4.5.1.1
124	4.5.1.2
125	4.5.1.3
126	4.5.1.4
127	4.5.2.77
128	4.5.2.78
129	4.6.15
130	4.6.16