

# TECHNICAL EVALUATION REPORT

## REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY EVALUATION REPORTS (F-11, B-60)

NORTHEAST NUCLEAR ENERGY COMPANY  
MILLSTONE NUCLEAR POWER PLANT UNIT 1

VOL. 1 OF 2-  
*Docket File*

NRC DOCKET NO. 50-245

FRC PROJECT C5257

NRC TAC NO. 42523

FRC ASSIGNMENT 13

NRC CONTRACT NO. NRC-03-79-118

FRC TASK 459

*Prepared by*

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*Prepared for*

Nuclear Regulatory Commission  
Washington, D.C. 20555

Lead NRC Engineer: N. B. Le  
P. Shemanski

May 28, 1982

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## FOREWORD

This Technical Evaluation Report was prepared by Franklin Research Center under a contract with the U.S. Nuclear Regulatory Commission (Office of Nuclear Reactor Regulation, Division of Operating Reactors) for technical assistance in support of NRC operating reactor licensing actions. The technical evaluation was conducted in accordance with criteria established by the NRC.

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T. J. DelGaizo from WESTEC Services, Inc., R. Garrison from ORFI Systems, Inc., and M. A. Fedele from Evaluation Associates, Inc., also contributed to the technical preparation of this report through subcontracts with Franklin Research Center.

IDENTIFICATION OF PROPRIETARY INFORMATION

Some of the information in this technical evaluation report was obtained from manufacturers' proprietary test reports. All proprietary test reports are identified as such in Section 6, References, of this report. Checksheets in Section 4 containing proprietary information have been replaced with a checksheet page stating that the proprietary information has been removed.

## 1. INTRODUCTION

### 1.1 PURPOSE OF THE EVALUATION

The purpose of this report is to:

- o evaluate licensees' resolutions of outstanding issues related to safety-related electrical equipment environmental qualification (EEQ) discussed in the Nuclear Regulatory Commission (NRC) Safety Evaluation Reports (SERs) in accordance with NRC criteria. The objective is to identify all cases where a licensee's response has not resolved the significant qualification issues.
- o evaluate licensees' qualification documentation of safety-related electrical equipment located in harsh environments in accordance with criteria established by the NRC and to identify (1) equipment for which qualification documentation is adequate, i.e., substantiates that the equipment is capable of performing its specified design basis safety function when it is exposed to a harsh environment and (2) equipment for which qualification documentation is deficient, i.e., does not give reasonable assurance that the equipment is capable of performing its specified safety function.
- o evaluate licensees' qualification documentation of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2) [17],\* in accordance with criteria established by the NRC in a manner identical to the evaluation of all other safety-related electrical equipment.

### 1.2 SCOPE OF THE EVALUATION

The scope of this report is limited to the evaluation of environmental qualification of electrical 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.

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\*For References, see Section 6. Note that reference numbers are not presented in sequential order.

With respect to TMI Action Plan Implementation, the scope of this report is limited to those sections of NUREG-0737 [31] applicable to equipment having an installation implementation date of January 1, 1981. Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the Licensee.

The NRC has determined that the evaluation of environmental qualification of equipment items (1) located in plant areas whose environment is not adversely affected by the design basis event (DBE) (e.g., equipment located in "mild" environments) or (2) required to achieve and maintain cold shutdown, is not to be included within the scope of this report. However, where the Licensee has identified these equipment items in the EEQ submittals to the NRC, these items have been listed in NRC evaluation Category III.b in this report (see Section 3 of this report for definition of NRC evaluation categories).

Qualification aspects not included within the scope of this evaluation are:

- o seismic and dynamic qualification
- o equipment protection against natural phenomena
- o equipment operational service conditions (e.g., vibration, voltage, and frequency deviations)
- o equipment located where it is subjected to the outdoor environment
- o equipment protection against fire hazards
- o equipment protection against missiles
- o equipment located in plant areas whose environment is not adversely affected by the design basis event
- o equipment required to achieve and maintain cold shutdown.

### 1.3 GENERIC ISSUE BACKGROUND

Safety-related electrical equipment must be capable of performing design safety functions under all normal, abnormal, and accident conditions. 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.



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 LOCA, main steam line break (MSLB) inside the reactor containment, or a HELB outside the reactor containment (such as a main steam or feedwater line break). In addition, depending on specific plant design features, other postulated HELB locations may be associated with:

- o the chemical and volume control system (CVCS) letdown line
- o the steam supply piping to
  - the auxiliary feedwater (AFW) pump turbine
  - the reactor core isolation cooling (RCIC) pump turbine
  - the high pressure core injection (HPCI) pump turbine
  - the isolation condenser
- o steam generator blowdown.

The NRC criteria for reviewing the safety of nuclear power generating stations include the requirement that the qualification of safety-related electrical equipment be substantiated by auditable documentation of the program that establishes the ability of the equipment to function as specified in the station design. This report is restricted to a technical evaluation of the equipment's ability to function in harsh environments resulting from DBEs.

Qualification criteria applied during the licensing of the older nuclear power plants have been modified over the years, and specific 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, 334-80, 381-77, 382-80, 535-79, 627-80, 649-80, and 650-79. NRC NUREG documents 0413 and 0588 have been developed to address this topic. In particular, NUREG-0588 (published for comment in December 1979 and reissued as Revision 1 in July 1981) 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 IE 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, Criterion 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."

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

The NRC staff has evaluated the licensees' equipment qualification programs 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 Std 323-71; however, no regulatory guide was issued adopting this standard. For plants whose SERs were issued after July 1, 1974, the Commission issued Regulatory Guide 1.89, which in most respects adopted the most recent standard, IEEE Std 323-74.

In November 1977, the Union of Concerned Scientists petitioned the NRC Commissioners to upgrade current standards for the environmental qualification of safety-related electrical equipment in operating plants. Subsequently, the NRC staff instituted the Systematic Evaluation Program (SEP) to determine the degree to which the older operating nuclear power 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) 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 threshold 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 licensees' 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 for evaluating 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 IE Electrical Equipment in Operating Reactors" [15].

(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. It was originally intended that the licensees 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 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 documentation under SEP Topic III-12. The assignment was to review equipment environmental qualification documentation and to present the results in the form of a Technical Evaluation Report for the 11 oldest plants (included in the SEP review). The plants included within the assignment were the Palisades, Oyster Creek, Ginna, Haddam Neck, Yankee Rowe, LaCrosse, and Big Rock Point plants and Zion Station Units 1 and 2, Indian Point Units 2 and 3, Millstone Unit 1, Dresden Unit 2, and San Onofre Unit 1. (This assignment was completed in April 1981.)

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 cited the DOR Guidelines as the criteria to be used in evaluating the adequacy of the safety-related electrical equipment qualification. The scope of the review was expanded to include HELBs (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; NUREG-0588 would be used as a guide in cases where the DOR Guidelines do not provide sufficient detail.

In early February 1980, the NRC decided that Indian Point Units 2 and 3 and Zion Station 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 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 which included a second document, "Guidelines for Identification of That Safety Equipment of SEP Operating Reactors for Which Environmental Qualification Is To Be Addressed" [15], 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 were assigned responsibility for the technical review of the licensees' responses to IE Bulletin 79-01B, and the task leader was assigned responsibility for the overall coordination of the review effort with NRC staff 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 23, 1980, the NRC issued Memorandum and Order CLI-80-21 [18], 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 SERs 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. The Memorandum and Order established the DOR Guidelines and NUREG-0588 as acceptable interpretations of the General

Design Criteria for an interim period. Rulemaking was proposed for the purpose of establishing a permanent interpretation of the General Design Criteria.

The staff held regional meetings with the licensees and interested parties during the week of July 13, 1980. 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 on September 29 and October 24, 1980, respectively.

In October 1980, EG&G Idaho, Inc., awarded Franklin Research Center a contract to provide assistance in the equipment environmental qualification review for 13 of the plants whose licensees responded to IE Bulletin 79-01B. The assignment was to evaluate the licensees' equipment environmental qualification submittals and to present the results in the form of a Technical Evaluation Report for each plant. The objective of this Technical Evaluation Report was to review the licensees' submittals to determine if safety-related electrical equipment was reviewed for environmental qualification in accordance with the DOR Guidelines and NUREG-0588 as required by IE Bulletin 79-01B. The NRC was to perform an audit of the qualification documentation references as part of its Safety Evaluation Program. If discrepancies were found, the audit was to be extended. The plants included within this assignment were Nine Mile Point Unit 1, Millstone Unit 2, Salem Unit 1, Browns Ferry Units 1, 2, and 3, Brunswick Units 1 and 2, Hatch Units 1 and 2, Dresden Unit 3, and Quad Cities Units 1 and 2. (This assignment was completed in June 1981.)

In mid-1981, the NRC issued SERs on environmental qualification of safety-related electrical equipment to licensees of all operating plants.

Where additional qualification information was required, the licensees were directed to respond to the NRC within 90 days of receipt of the SER.

In May 1981, under the licensing action assistance contract, NRC authorized Franklin Research Center to proceed with the review and evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments, required for TMI Lessons Learned Implementation on 71 operating plants.

In July 1981, the NRC conducted extensive meetings with the nuclear industry to address concerns and questions regarding qualification of safety-related equipment. In addition, the NRC provided licensees with detailed information with respect to the format and expected content of the licensees' 90-day responses to the NRC SERs. Draft outlines of the following proposed programs were also presented to the industry: environmental qualification of equipment located in "mild" environments, seismic and dynamic qualification, and environmental qualification of mechanical equipment.

~~On September 23, 1981, the NRC Commissioners considered a petition (SECY-81-486) to extend the deadline for actions to be taken by licensees to achieve environmental qualification of all safety-related equipment. On September 30, 1981, the NRC Commissioners extended this deadline to the second refueling outage after March 31, 1982.~~

Per  
SER  
↓  
memo  
Dec. 6, 82

In October 1981, the NRC authorized Franklin Research Center to include within the scope of the existing EEQ assignment (TMI Lessons Learned Implementation Equipment) the evaluation of licensees' resolutions of outstanding issues related to equipment environmental qualification discussed in the NRC SERs in accordance with NRC criteria. The assignment was to review the qualification documentation and to present the results in the form of a Technical Evaluation Report for 71 operating plants. (This report was developed within the scope of this assignment.)

On January 7, 1982, the NRC Commissioners approved the issuance of the proposed rule, "Environmental Qualification of Electric Equipment for Nuclear Power Plants," for public comment. The proposed rule was published in the Federal Register (Volume 47, No. 13) dated January 20, 1982.

In February 1982, Proposed Revision 1 to Regulatory Guide 1.89, "Environmental Qualification of Electric Equipment for Nuclear Power Plants," was issued for public comment. This regulatory guide was issued to (1) reflect current NRC positions on equipment qualification and (2) provide guidelines for meeting the NRC Commissioners proposed rule on equipment qualification.

The final rule, "Environmental Qualification of Electric Equipment for Nuclear Power Plants," was subsequently issued on April 16, 1982 by the NRC (to be published in the Federal Register) to clarify and strengthen the criteria for environmental qualification of electrical equipment. The final rule is to be incorporated into 10CFR50 as Section 50.49, "Environmental Qualification of Electric Equipment for Nuclear Power Plants." The significant features of the rule are:

- o Requalification of electrical equipment in accordance with the rule will not be required for equipment qualified or being qualified in accordance with the DOR Guidelines and IE Bulletin 79-01B or NUREG-0588, provided the qualification program commenced within 90 days after the effective date of the rule.
- o The requirement to qualify equipment needed to complete one path of achieving and maintaining a cold shutdown condition has been deleted.
- o A new section has been added, covering the qualification of equipment located in mild environments.
- o The Commission deadline for actions to be taken by licensees to achieve environmental qualification of all safety-related equipment is extended to the second refueling outage after March 31, 1982.

On April 20, 1982, the NRC staff issued Generic Letter No. 82-09 [41] to all licensees, presenting the NRC's position and clarification of certain aspects of the environmental qualification requirements.

#### 1.4 SPECIFIC ISSUE BACKGROUND

By a letter dated December 23, 1977, the Northeast Nuclear Energy Company (NNECO) was requested by the NRC to address the environmental qualification of safety-related electrical equipment for the Millstone Point Unit 1 plant. Information requested from NNECO included identification of electrical



equipment required to perform safety functions while subjected to design basis accident environments, definitions of environmental service conditions at equipment locations, and the status of environmental qualification documentation. On January 18, 1978, the NRC conducted a plant visit to Millstone Point Unit 1 to explain the purpose of the environmental qualification review program and to provide guidance with regard to the contents of the Licensee's response to the December 23, 1977 NRC letter. In response to the NRC request, NNECO provided information via submittal letters dated March 6, 1978 [39], and March 11 [38], May 1 [6], and June 2, 1980 [1].

On February 15, 1980, NRC qualification guidelines for identification and evaluation of safety-related equipment were transmitted to NNECO.

During the week of June 30, 1980, NRC and FRC representatives visited the Millstone Point Unit 1 plant site, inspected safety-related systems and components, identified and tabulated safety-related systems and components by discussions with plant personnel, and conducted a general overview of the June 2, 1980 submittal. At this meeting, revised System Component Evaluation Work Sheets were given to the NRC and FRC.

On July 7 [2], July 23 [27], and August 5 [27], 1980, NNECO submitted additional information which supplemented the June 2, 1980 submittal.

On September 23, 1980, FRC issued to the NRC a Draft Interim Technical Evaluation Report [40].

On October 31, 1980, NNECO transmitted to the NRC and FRC the final EEQ submittal [8].

The final Technical Evaluation Report (TER) [19] on the qualification status of safety-related electrical equipment subject to a harsh environment was issued to the NRC for Millstone Point Unit 1 on April 30, 1981.

The NRC Safety Evaluation Report (SER) [21], which included the technical conclusions of the TER, was issued to NNECO on June 10, 1981.

NNECO provided a response [22] to the SER by letter dated September 14, 1981.

Requests for information [35, 36] were transmitted to the NRC by FRC to obtain qualification documentation referenced by the Licensee, TMI Action Plan information, and correlations to NUREG-0737 [31].

NNECO responded to the requests for information by letter dated February 9, 1982 [23].

On April 28, 1982 [42], the Licensee transmitted supplemental information on the peak temperature in the drywell following an accident.

## 2. NRC CRITERIA FOR ENVIRONMENTAL QUALIFICATION

### 2.1 CRITERIA PROVIDED BY THE NRC

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

- o DOR Guidelines, "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors," November 1979 [15]
- o NUREG-0588, Revision 1, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," July 1981 [30].

Other appropriate references used in the review of the licensees' electrical equipment environmental qualification submittals are:

- o IE Bulletin 79-01B, "Environmental Qualification of Class 1E Equipment," January 14, 1980; Supplement No. 1, February 29, 1980; Supplement No. 2, September 29, 1980; and Supplement No. 3, October 24, 1980 [33, 34, 16, 17,]
- o NUREG-0737, "Classification of TMI Action Plan Requirements," November 1980 [31]. This document is applicable for the selection of equipment for the evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The scope of the review is limited to equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981. Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

### 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 screening guidelines.

#### 2.2.1 Requirements and Applicable Criteria

Items 3 and 17 of Supplement 2 to IE Bulletin 79-01B [16] describe the application of the DOR Guidelines and NUREG-0588 to operating reactors (ORs),

near term operating license applicants (NTOLs), and construction permit applicants (CPs). The qualification requirements and applicable criteria are stated as follows:

[Question 3]

"Define the requirements and applicable criteria for ORs, NTOLs, and OLs. Specifically address the NTOLs whose CP SER is prior to July 1974 and after July 1974. Can a CP whose SER is prior to 1974 use the DOR guidelines?"

[NRC Answer to Question 3]

"Table 1 describes the application of each document. All operating reactors as of May 23, 1980, will be evaluated against the DOR guidelines. In cases where the DOR guidelines do not provide sufficient detail, but NUREG-0588 Category II does, NUREG-0588 will be used.

TABLE 1

REQUIREMENTS

ORs	OLs		CPs
	CP SER Before 7/1/74	CP SER After 7/1/74	
DOR GUIDELINES	NUREG-0588 (CAT. II)	NUREG-0588 (CAT. I)	NUREG-0588 (CAT. I) or NEW RULE WHEN IN EFFECT
USE NUREG-0588 AS NECESSARY	NUREG-0588 (CAT. II)	NUREG-0588 (CAT. I)	NUREG-0588 (CAT. I) or NEW RULE WHEN IN EFFECT

REPLACEMENT COMPONENTS  
USE NUREG-0588 (CAT. I)

All plants licensed after May 23, 1980, shall conform to NUREG-0588. In accordance with Regulatory Guide 1.89, all such operating licenses for facilities whose construction permit SER is dated July 1, 1974 or later, are to be reviewed against IEEE Std. 323-1974. Thus, for these licensees, the operating license applicant is to qualify equipment to the Category I column in NUREG-0588. For operating licenses issued after May 23, 1980, whose construction permit SER is dated before July 1, 1974, the operating license applicant is to qualify equipment to at least Category II column of NUREG-0588; unless the licensee made commitment in the construction permit record to use the 1974 standard, or unless the operating licensee application record indicates that the 1974 standard is to be used, in such cases Column I of NUREG-0588 is to be used.

While there are differences between the Category II column of NUREG-0588 and the DOR guidelines, the differences are in details and in the

optional part of the documents. The minimum requirements set forth by these documents are general and compatible. Thus, the minimum standards set by either of the two documents are equally applicable to ORs and NTOLs."

[Question 17]

"Define the requirements for 'replacement parts.' Are they the same for 'spare' parts? Clearly discuss the alternatives for existing inventories of parts/components. If equipment is ordered to meet IEEE Std. 323-1974 standard but lead time exceeds June 1982, can we use IEEE Std. 323-1971 qualified components in the interim?"

[NRC Answer to Question 17]

"The requirements for 'replacement' and 'spare' parts are the same for the purposes of complying with the Commission order and memorandum. After May 1980, all parts used to replace presently installed parts shall be qualified to Category I of NUREG-0588 'unless there are sound reasons to the contrary.' Nonavailability and/or the fact that the part to be used as a replacement is a spare part purchased prior to May 23, 1980, and is in stock are among the factors to be considered in weighing whether there are 'sound reasons to the contrary.' All replacement parts shall as a minimum conform to the requirements described in the answer to question 3. Justification for deviation from Category I of NUREG-0588 shall be documented by the licensee and records shall be available for audit, upon request by the NRC."

#### 2.2.2 Application of Requirements and Criteria to TMI Lessons Learned Implementation Equipment

The NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation in accordance with criteria established by the NRC in a manner identical to the evaluation of all other safety-related electrical equipment. Additionally, Item 21 of Supplement 2 to IE Bulletin 79-01B [16] states:

"TMI Lessons Learned instrumentation will be considered in the February 1, 1981 SER. This equipment is subject to the same requirements as other safety-related electrical equipment. The guidance and requirements of NUREG-0588 referenced daughter standards, and Reg Guides will be used by the staff in assessing the adequacy of the qualification information."

Item 2 of Supplement 3 to IE Bulletin 79-01B [17] states:

"IEB 79-01B required a 90 day response which was due in mid-April 1980. Supplement 1 (Feb. 1980) informed licensees that equipment which was

'planned' to be installed as a result of lessons learned need not be addressed in that response. Some of this equipment has since been installed. Supplement #2 (Q.5, Q.21) identified that the staff position was that equipment which is installed should be treated in a manner similar to all other safety-related electrical equipment and be addressed in the November 1, 1980 submittal. This position represents no change in staff position regarding the scope of the review. However, since the staff position on this issue was unclear the following will apply:

- a. Qualification information for installed TMI Action Plan equipment must be submitted by February 1, 1981.
- b. Qualification information for future TMI Action Plan equipment (ref. NUREG-0737, when issued), which requires NRC pre-implementation review, must be submitted with the pre-implementation review data.
- c. Qualification information for TMI Action Plan equipment currently under NRC review should be submitted as soon as possible.
- d. Qualification information for TMI Action Plan equipment not yet installed which does not require pre-implementation review should be submitted to NRC for review by the implementation date."

### 2.2.3 Equipment Not in the Scope of the Qualification Review

Supplement 2 of IE Bulletin 79-01B [16] 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 high energy line break (HELB) or to nuclear radiation emanating from circulation of fluids containing radioactive substances. Supplement 3 of IE Bulletin 79-01B [17] permits deferment of the review of environmental qualification for all equipment required to achieve and maintain the plant in a cold shutdown condition. Supplements 2 and 3 of 79-01B originally permitted deferment until after February 1, 1981 of the qualification review of equipment located in a mild environment or required to achieve and maintain the plant in a cold shutdown condition. Since the issuance of Supplements 2 and 3, the NRC has determined that the review of environmental qualification for this equipment is not within the scope of the present review program.

## 2.2.4 Clarification of Qualification Requirements

### 2.2.4.1 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 [16], "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, the peak temperature, and subsequent temperature/pressure profiles as functions of time. If containment spray is to be used, the impact of the spray on required equipment should be assessed.

The adequacy of a plant-specific profile depends 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 loss-of-coolant accident (LOCA) and HELB accidents inside containment.

### 2.2.4.2 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 [16] 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.

#### 2.2.4.3 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 equal to the period from the initiation of the accident until the service conditions return to normal. Supplement 2 to IE Bulletin 79-01B [16] 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."

#### 2.2.4.4 Test Sequence (DOR Guidelines Section 5.2.3)

Supplement 2 to IE Bulletin 79-01B [16] 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."



## 2.2.4.5 Radiation

(DOR Guidelines Sections 4.1.2, 4.2.2, and 4.3.2, Subitem 2)

Supplement 2 to IE Bulletin 79-01B [16] 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 of 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:

	<u>LOCA</u>	<u>Non-LOCA HELB</u>
Outside Containment	NUREG-0578 (100/50/1 in RCS) [*]	NUREG-0588 (10/10/0 in RCS)
Inside Containment	<u>Larger of</u>  NUREG-0588 (100/50/1 in containment)	NUREG-0588 (10/10/0 in RCS)
	or  NUREG-0578 (100/50/1 in RCS)	

\*The numbers in parentheses represent % noble gases/% iodine/% particulates. RCS means reactor coolant system.

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."

### 2.2.5 Additional Clarification of Qualification Requirements

The NRC has worked with a number of licensees, at their requests, to provide further clarification on environmental qualification requirements. On January 20, 1982, the NRC issued Generic Letter No. 82-09 [41] presenting staff positions on certain aspects of the qualification requirements. Generic Letter No. 82-09 states:

#### "1. Operator Display Instrumentation

- Q. Given the interrelated activities associated with display instrumentation (e.g., NUREG-0700, NUREG-0799, proposed Regulatory Guide 1.97 and Equipment Qualification efforts), what display instrumentation referenced in emergency operating procedures must be identified in licensee submittal to the NRC?
- A. All display instrumentation referenced in the emergency procedures need not be identified. The NRC requires that licensees need only identify and have available qualification documentation on those operator display instruments which are safety-related (see Question 2). If licensees have previously supplied a listing of all display instrumentation referenced in emergency procedures, licensees may identify (such as by the use of an \*) which of those instruments are safety-related. The staff will defer review of the basis for this safety-related classification until other NRC activities<sup>1</sup> have been implemented. When these other activities are implemented, additional instruments presently not requiring qualification may require upgrading to a safety-related status and/or may require qualification. Licensees will be required at that time to qualify this instrumentation in accordance with the following criteria:
- o For new or upgraded instrumentation with a required operation date prior to the equipment qualification deadline, qualification must be accomplished by the equipment qualification deadline.

<sup>1</sup>Such activities include preparation of new emergency procedures (NUREG-0799), control room design reviews (NUREG-0700), and upgrading of accident monitoring instrumentation (Reg. Guide 1.97 and NUREG-0737).

- o For new or upgraded instrumentation with a required operation date after the equipment qualification deadline, qualification must be accomplished prior to equipment operation and plant acceptance.

## 2. Safety-Related Equipment

- Q. For Equipment Qualification purposes, what constitutes all safety-related electrical equipment?
- A. The Commission, in CLI-80-21, required the environmental qualification of only safety-related electrical equipment. Identification of the safety-related equipment installed at specific plants can be obtained from FSARs, Technical Specifications and other docketed correspondence setting forth NRC requirements or licensee commitments. Identification of safety-related equipment installed in harsh environments at specific plants must be supplied by the licensee. The necessity for upgrading nonsafety-related system to safety-related status will be the subject of other NRC reviews.

## 3. Replacement Parts

- Q. Please clarify the NRC requirements on replacement parts.
- A. In CLI-80-21, the Commission stated that unless there were sound reasons to the contrary, replacement equipment should be qualified to the standards set forth in Category I of NUREG-0588. The Commission's position was designed to promote the policy of upgrading the environmental qualification and reliability of installed safety-related electrical equipment. To meet this overall goal, licensees must institute internal policy practices consistent with the Commission's statement.

Situations may arise in which upgrading to NUREG-0588, Category I of replacement equipment qualified to NUREG-0588, Category II or the DOR Guidelines will not be compatible with overall station safety and performance goals. Licensees must review such situations on a case-by-case basis and determine that 'sound reasons to the contrary' do, in fact, exist which warrant the use of replacement equipment (not necessarily in-kind) qualified to the DOR Guidelines or NUREG-0588, Category II. For equipment located in a harsh environment, licensees' procedures must provide for documentation and substantiation of such determinations.

Conditions which reflect sound reasons why qualification standards for replacement of equipment in a harsh environment need not be upgraded to NUREG-0588, Category I include the following:

1. The licensee has replacement equipment in stock that meets the DOR Guidelines or NUREG-0588, Category II, and procurement actions regarding such replacement equipment had commenced prior to May 23, 1980.
  2. Replacement equipment qualified to the NUREG-0588, Category I standards does not exist.
  3. Replacement equipment qualified to the NUREG-0588, Category I standards is not available to meet installation and operation schedules. Equipment qualified to the DOR Guidelines or NUREG-0588, Category II may be used for an interim period until Category I equipment is obtained and an outage of sufficient duration is available for replacement. Justification for use of the non-Category I qualified replacement equipment beyond this interim period must be submitted to the NRC for approval prior to the end of the interim period and in sufficient time for reasonable NRC review.
  4. Replacement equipment qualified to NUREG-0588, Category I standards would require significant plant modifications to accommodate its use.
  5. Operating performance and reliability data for the Category I equipment indicates poor overall equipment performance. For example, mean time to failure is significantly shorter for the Category I replacement equipment.
  6. The use of replacement equipment qualified to NUREG-0588, Category I standards has a significant probability of creating human factor problems that will negatively affect plant safety and performance, e.g., (1) knowledge, skills and ability of existing plant staff require significant upgrading to operate or maintain the specific Category I replacement equipment; (2) the use of equipment qualified to Category I standards creates a one-of-a-kind application; or (3) maintenance, surveillance or calibration activities are unnecessarily complex.
5. Submergence Outside Containment
- Q. For equipment qualification purposes, what are the staff requirements concerning submergence of equipment outside containment?

- A. The Staff requires that the licensee submit documentation on the qualification of safety-related equipment that could be submerged due to a high energy line break outside containment.

#### 6. Radiation

- Q. Is the staff screening value of  $4 \times 10^7$  rads applicable to all operating reactors?
- A. No. This screening value is applicable only to PWRs with dry type containments. However, for PWRs with dry type containments, the licensee may choose to use plant specific analysis instead of the screening value. For plants with other containment types, the licensee must use plant specific analysis.

Acceptable to the Staff for equipment qualification purposes are radiation values developed as part of the plant licensing process provided that they are based on the TID14844 source terms and are conservatively performed. In order to assure that the methodologies are appropriate, the Staff requests two component specific sample calculations (one for inside and one for outside containment), and a brief written description of each of the methodologies used, their application and associated conservatisms. Such sample calculations and a statement by the licensee that the values of radiation exposure of components so derived are appropriate for environmental qualification of equipment will satisfy the Staff's concern on the 'Radiation Specification Value' used during the qualification reviews.

#### 7. Containment Service Conditions

- Q. Must the Staff value (identified in the SERs) of  $T_{SAT}$  for PWRs and  $T_{SAT} + 20^\circ F$  for BWRs be used as the maximum in-containment temperature for the purpose of equipment qualification?
- A. No. The Staff will accept the use of these values. However, an acceptable alternative to the NRC staff's temperature criterion used for the service conditions must base that service condition on the FSAR analysis or other NRC approved analysis, provided that the specific analysis, or a summary of that analysis, together with reference to the previous NRC acceptance of the analysis is submitted by the licensee. In addition, some of the information in the associated safety evaluation may require clarification.

#### 8. One Hour Minimum Operating Time

- Q. The Staff has previously indicated that certain exceptions to the one hour minimum operating time rule are permitted. Can further clarification be provided?

- A. With regard to plants subject to the qualification requirements of the DOR Guidelines or Category II of NUREG-0588, for those pieces of equipment tested prior to May 23, 1980, the test data and analysis may be used to qualify the equipment to the required operating time plus an appropriate margin. The one hour margin requirement need not be applied. However, subsequent failures should be shown not to be detrimental to plant safety.

The one hour time margin rule is not applicable to equipment whose safety function is performed prior to significant changes in the environment at the equipment location.

#### 9. Aging

- Q. Must a qualified life be developed for all safety-related electrical equipment located in harsh environments?
- A. Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments. A qualified life, in accordance with the provisions in IEEE 323-1974, is required for equipment, including replacement parts, qualified to Category I of NUREG-0588 that is located in a harsh environment.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs, and that information should be incorporated into the system component evaluation worksheets (SCEWS). For other equipment, the aging column in the SCEWS should be marked 'No Known Susceptibility'."

### 3. METHODOLOGY USED FOR THE EVALUATION

#### 3.1 INTRODUCTION

As discussed in Section 1.3 of this report, the NRC issued Safety Evaluation Reports (SERs) on environmental qualification of safety-related equipment to licensees of all operating plants in mid-1981.

The SERs identified various equipment qualification deficiencies as indicated below:

#### LEGEND: DESIGNATION FOR DEFICIENCY

R - Radiation	M - Margin
T - Temperature	I - HELB Evaluation Outside Containment Not Completed
QT - Qualification Time	QM - Qualification Method
RT - Required Time	RPN - Equipment Relocation or Replacement, Adequate Schedule Not Provided
P - Pressure	EXN - Exempted Equipment Justification Inadequate
H - Humidity	SEN - Separate Effects Qualification Justification Inadequate
CS - Chemical Spray	QI - Qualification Information Being Developed
A - Material Aging Evaluation, Replacement Schedule, Ongoing Equipment Surveillance	RPS - Equipment Relocation or Replacement Schedule Provided
S - Submergence	
(R) - Licensee has committed to replace equipment	

The SERs directed licensees to "either provide documentation of the missing qualification information which demonstrates that safety-related equipment meets the DOR Guidelines or NUREG-0588 requirements or commit to a corrective action (re-qualification, replacement [etc.]) to establish qualification by June 30, 1982." Licensees were required to respond to the NRC within 90 days of receipt of the SER.

As stated in Section 1.1, the purpose of this report is (1) to evaluate licensees' resolutions of outstanding issues related to safety-related electrical equipment environmental qualification (EEQ) discussed in the NRC's SERs in accordance with NRC criteria, and (2) to evaluate licensees' qualification documentation of safety-related electrical equipment, including

TMI Lessons Learned Implementation equipment, located in harsh environments in accordance with criteria established by the NRC (see Section 2 of this report). The methodology used to evaluate (1) the Licensee's response to the NRC SER and (2) the equipment environmental qualification is presented herein.

### 3.2 METHODOLOGY

The Licensee, Northeast Nuclear Energy Company, provided a response to the SER and additional qualification information in its submittals [22, 23, 42] to the NRC for the Millstone Unit 1 Nuclear Power Plant.

The following bases provided by the NRC were used to determine the relative completeness of the Licensee's submittals:

- o Determine whether the Licensee provided specific responses to the SER concerns.
- o Determine whether the Licensee proposed corrective actions and a schedule for completion of the actions.
- o Determine whether the Licensee addressed the NRC's concern for margin with respect to the containment environmental conditions.
- o Determine whether the Licensee revised the environmental parameters.
- o Determine whether the Licensee's System Component Evaluation Work Sheets (SCEWS) were updated to correct deficiencies and add supplemental information.
- o Determine whether the Licensee provided justifications for interim operation for all unqualified equipment.
- o Determine whether the Licensee addressed aging and incorporated the results into the equipment maintenance program.

The extensive list of safety-related electrical equipment\* in various locations of the plant identified by the Licensee was analyzed, and all identical equipment located within plant areas that are exposed to the same environmental service conditions was grouped together and designated an

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



"equipment item." In this report, the term "equipment item" refers to a specific type of electrical equipment, designated by manufacturer and model, which is representative of all identical equipment in a plant area exposed to the same environmental service conditions (e.g., Flow Transmitter, Fischer & Porter, Model 10B2496, located within containment). This analysis resulted in a reduced listing of equipment (equipment items) that formed the basis for the review.

Appendix A contains the environmental service conditions for each location. Appendix B contains the tabulation of the equipment items, locations, function, plant identification numbers, required operating time, and applicable qualification documentation references. Appendix C lists the plant systems identified by the Licensee and the NRC as being essential to safety.

Each item in the list of safety-related electrical equipment items was reviewed in relation to:

- o the Licensee's response to the SER concerns
- o technical information received from the Licensee as a result of requests for additional information (Appendix E)
- o technical data derived from the Licensee's submittal
- o NRC DOR Guidelines or NUREG-0588 Revision 1 criteria
- o the Licensee's definition of harsh service environments (Appendix A)
- o documentation cited by the Licensee as evidence of qualification
- o applicable and available qualification documentation associated with the overall equipment environmental qualification program
- o the Licensee's analysis and/or justification of qualification
- o Licensee-proposed corrective action for qualification deficiencies
- o the Licensee's equipment/part replacement schedules
- o the Licensee's technical arguments concerning the adequacy of equipment, based on system operational considerations
- o the Licensee's rationale concerning exemption of equipment from qualification.

Topics not within the scope of the evaluation are:

- o completeness of the Licensee's listing of safety-related equipment
- o acceptability of Licensee-provided environmental service conditions.

The NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with those sections of NUREG-0737 which have an equipment installation implementation date of January 1, 1982 (sections are identified below). Where applicable, a review was to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment

II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position

II.E.1.2 (PWR/1-1-81) Auxiliary Feedwater System Automatic Initiation and Flow Indication

II.E.3.1 (PWR/1-1-81) Emergency Power Supply for Pressurizer Heaters (Safety-Grade Interfaces)

II.E.4.1 (ALL/7-1/81) Dedicated Hydrogen Penetrations

II.E.4.2 (ALL/1-1-81) Containment Isolation Dependability

II.F.2 (PWR/1-1-81) Instrumentation for Detection of Inadequate Core Cooling

II.G.1 (PWR/1-1-81) Emergency Power for Pressurizer Equipment (Safety-Grade Interfaces)

II.K.2.10 (PWR/B&W/7-1-81) Safety-Grade Anticipatory Reactor Trip

II.K.3.9 (PWR/W/1-1-81) PID Controller Modification (If Hardware Change Involved)

- II.K.3.12 (PWR/W/1-1-81) Anticipatory Reactor Trip upon Turbine Trip
- II.K.3.13 (PWR/GE/7-1-81) Separation of HPCI and RCIC Initiation Signals
- II.K.3.15 (BWR/GE/7-1-81) Prevention of Spurious Isolation of HPCI and RCIC Systems
- II.K.3.19 (BWR/GE/7-1-81) Interlock on Recirculation Pump Loop
- II.K.3.21 (BWR/GE/7-1-18) Restart of Core Spray and LPCI Systems (If Hardware Changed Out)
- II.K.3.27 (BWR/GE/7-1-81) Provide Common Reference Level for Vessel Level Instrumentation (If Hardware Changed Out)

Licensees whose plants were included within the NRC Systematic Evaluation Program received a Technical Evaluation Report (TER) in addition to the SER. The TER was based on a review of equipment environmental qualification documentation associated with the Licensee's EEQ submittals. The qualification deficiencies identified in the SER were derived from the TER. Plants included within this program were the Palisades, Oyster Creek, Ginna, Haddam Neck, Yankee Rowe, LaCrosse, and Big Rock Point plants and Zion Station Units 1 and 2, Indian Point Units 2 and 3, Millstone Unit 1, Dresden Unit 2, and San Onofre Unit 1. For these plants, the evaluation presented herein is based on (1) the result of the initial TER, (2) the Licensee's response to the NRC SER and the TER, and (3) the Licensee's updated EEQ submittal(s).

TERs were also developed for the following plants: Nine Mile Point Unit 1, Millstone Unit 2, Salem Unit 1, Browns Ferry Units 1, 2, and 3, Brunswick Units 1 and 2, Hatch Units 1 and 2, Dresden Unit 3, and Quad Cities Units 1 and 2. The objective of those TERs was to review the Licensee's submittals to determine if safety-related electrical equipment was reviewed for environmental qualification by the Licensee in accordance with the DOR Guidelines and NUREG-0588 as required by IE Bulletin 79-01B. For these 13 plants and all other plants, excluding the 14 plants associated with the Systematic Evaluation Program, the evaluation presented herein is based solely on (1) the Licensee's response to the NRC SER and (2) the Licensee's revised EEQ submittal(s).

This technical evaluation was conducted to identify (1) whether the Licensee provided an adequate response to the SER concerns (and TER concerns,


where applicable), (2) major deficiencies within the equipment qualification program, and (3) whether the Licensee proposed adequate corrective actions to resolve qualification deficiencies and provided a schedule for completion of the corrective actions. The TER was written primarily to address deviations from the NRC criteria and requirements. Technical data or test results that satisfy the qualification criteria are not discussed herein.

The evaluation presented in Section 4 of this report includes completed equipment environmental qualification review checksheets (partially handwritten) which compile both the technical information necessary to conduct the review and the results of the evaluation. Parameters listed on these checksheets were derived from the appropriate NRC screening criteria. The evaluation of each equipment item includes several checksheet pages. Only those checksheet pages necessary to complete the evaluation for each equipment item are included in this report. A complete listing of the checksheet pages is shown on the bottom of Checksheet 1a, reproduced here as Figure 3-1.

The checksheets contain the following information:

- o Equipment item information (see Figure 3-1), for example:
  - Solenoid Valve Located in Turbine Building (Area #7)
  - Automatic Switch Co. (ASCO) Model LB8300B61U
  - Actuates Feedwater Control Valves (V-4269, V-4270)
  - Licensee Reference 839
  - Required Operating Time: Short term (SI signal)
  - TER Checksheet No. 1
  - Reference 59, Section 4.5.2.6
  - Licensee Submittal: Page 9 [62]; Table 3, Page 1 [1]; SCEW 1
- o Qualification deficiencies identified in the SER (see Figure 3-1)
- o Licensee's response to the SER
- o Licensee's statements and rationale for qualification
- o Licensee's corrective action and replacement schedule
- o Evaluation of qualification including identification of all deficiencies
- o Evaluation of system considerations presented by the Licensee as a rationale for excluding equipment from qualification.

The results of the evaluation are summarized on Checksheet 2 (Equipment Environmental Qualification Summary Form) for each equipment item. Checksheet

 <p>Franklin Research Center A Division of The Franklin Institute 20th and Race Streets, Phila. Pa. 19103 (215) 448-1000</p>	<p>NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _____</p>	<p>Page 1a</p>
<p>EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ____</p>		

Equipment Item No. 1  
Solenoid Valves Located in Turbine Building (Area #7)  
Automatic Switch Co. (ASCO) Model LB8300B61U  
Actuates Feedwater Control Valves (V-4269, V-4270)  
Licensee Reference 1617  
Required Operating Time: Short term (SI signal)  
TER Checksheet No. 1  
Reference 59, Section 4.5.2.6  
Licensee Submittal: Page 9 [62]; Table 3, Page 1 [1]; FRC SCEW 1

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
(See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c

Figure 3-1. Sample Checksheet Page 1a  
"Equipment Item"

2 specifically identifies any qualification deficiencies determined by the evaluation and identifies the NRC qualification category to which the equipment item was assigned. A sample Checksheet 2 is presented in Figure 3-2.

All information was reviewed for conformance to the NRC criteria referenced in Section 2 of this report. As requested by the NRC, all applicable and available qualification documentation associated with the overall Equipment Environmental Qualification (EEQ) program was used by the reviewers, whether referenced by the Licensee or not.

Upon completion of the review for each equipment item, an overall evaluation of the component and a specific conclusion with respect to its qualification was developed. Based on the evaluation, each equipment item was assigned to one of the generic qualification categories provided by the NRC. The NRC category descriptions are presented in Section 3.3 of this report.


### 3.3 NRC QUALIFICATION CATEGORIES AND DEFINITIONS

- o NRC Category I.a  
EQUIPMENT THAT SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES OR NUREG-0588, OR HAS ACCEPTABLE DEVIATIONS FROM THE DOR/NUREG CRITERIA

This category includes equipment items which are fully acceptable on the basis that all applicable criteria defined in the DOR Guidelines or NUREG-0588 are (1) satisfied and the equipment has been found to be qualified or (2) sufficient information has been presented to determine that deviations from the criteria are acceptable or insignificant.

- o NRC Category I.b  
EQUIPMENT FOR WHICH DEVIATIONS FROM THE DOR GUIDELINES OR NUREG-0588 ARE JUDGED CONDITIONALLY ACCEPTABLE PROVIDED THAT SPECIFIC MODIFICATIONS ARE MADE

This category includes equipment items that do not satisfy one or more of the applicable criteria defined in the DOR Guidelines or NUREG-0588; however, the Licensee has stated that specific modifications will be made on or before a designated date. This equipment is considered by NRC to be conditionally acceptable provided that the specific modifications are made by the Licensee. When the modifications are completed as proposed, the Licensee states that the equipment will satisfy all applicable NRC requirements. Examples of specific modifications are (1) replacement of unqualified equipment with qualified equipment, (2) equipment hardware

 Franklin Research Center A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000	NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _____	Page 2
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ____		

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

<u>NRC REQUIREMENTS</u>	DESIGNATION: <u>X = DEFICIENCY</u>																		
Documented Evidence of Qualification Adequate	_____																		
Adequate Similarity Between Equipment and Test Specimen Established	_____																		
Aging Degradation Evaluated Adequately	_____																		
Qualified Life or Replacement Schedule Established (If Required)	_____																		
Program Established to Identify Aging Degradation	_____																		
Criteria Regarding Aging Simulation Satisfied (If Required)	_____																		
Criteria Regarding Temperature/Pressure Exposure:	_____																		
o Peak Temperature Adequate	_____																		
o Peak Pressure Adequate	_____																		
o Duration Adequate	_____																		
o Required Profile Enveloped Adequately	_____																		
o Steam Exposure (If Required) Adequate	_____																		
Criteria Regarding Spray Satisfied	_____																		
Criteria Regarding Submergence Satisfied	_____																		
Criteria Regarding Radiation Satisfied	_____																		
Criteria Regarding Test Sequence Satisfied	_____																		
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____																		
Criteria Regarding Functional Testing Satisfied	_____																		
Criteria Regarding Instrument Accuracy Satisfied	_____																		
Test Duration Margin (1 hour + Function Time) Satisfied	_____																		
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____																		
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><u>NRC QUALIFICATION CATEGORY</u></td> <td style="width: 40%; text-align: right;">                             DESIGNATION:  <u>X = CATEGORY</u> </td> </tr> <tr> <td>I.a Equipment Qualified</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>I.b Equipment Qualification Pending Modification</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>II.a Equipment Qualification Not Established</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>II.b Equipment Not Qualified</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>III.a Equipment Exempt From Qualification</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>III.b Equipment Not in the Scope of the Qualification Review</td> <td style="text-align: right;">_____</td> </tr> <tr> <td>IV Documentation Not Made Available</td> <td style="text-align: right;">_____</td> </tr> </table>		<u>NRC QUALIFICATION CATEGORY</u>	DESIGNATION: <u>X = CATEGORY</u>	I.a Equipment Qualified	_____	I.b Equipment Qualification Pending Modification	_____	II.a Equipment Qualification Not Established	_____	II.b Equipment Not Qualified	_____	II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____	III.a Equipment Exempt From Qualification	_____	III.b Equipment Not in the Scope of the Qualification Review	_____	IV Documentation Not Made Available	_____
<u>NRC QUALIFICATION CATEGORY</u>	DESIGNATION: <u>X = CATEGORY</u>																		
I.a Equipment Qualified	_____																		
I.b Equipment Qualification Pending Modification	_____																		
II.a Equipment Qualification Not Established	_____																		
II.b Equipment Not Qualified	_____																		
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____																		
III.a Equipment Exempt From Qualification	_____																		
III.b Equipment Not in the Scope of the Qualification Review	_____																		
IV Documentation Not Made Available	_____																		

Figure 3-2. Sample Checksheet Page 2

"Equipment Environmental Qualification Summary Form"

modification, (3) equipment relocation above submergence level, (4) relocation or shielding of equipment from radiation source, (5) verification of qualification by additional testing, (6) equipment relocation to a mild environment, and (7) qualification testing of equipment in progress.

- o NRC Category II.a  
EQUIPMENT FOR WHICH QUALIFICATION DOCUMENTATION IS INSUFFICIENT TO ESTABLISH THAT THE EQUIPMENT IS OR IS NOT QUALIFIED IN ACCORDANCE WITH THE DOR GUIDELINES OR NUREG-0588

The qualification of equipment items in this category, in accordance with the requirements of the DOR Guidelines or NUREG-0588, is significantly deficient or inconclusive based upon review of (1) the documentation provided by the Licensee or (2) applicable and available qualification documentation associated with the overall equipment environmental qualification program. The qualification documentation indicates significant deficiencies, which can be categorized as follows: (1) appropriate documentation reflecting qualification has not been cited and made available for review by the Licensee and there is no knowledge of applicable documentation; (2) the Licensee is awaiting qualification from the equipment vendor; or (3) the qualification documentation indicates significant deficiencies, however, where testing was conducted, no reported failures or severe anomalies were observed which would unquestionably affect the ability of the equipment to perform its design basis safety function(s).

- o NRC Category II.b  
EQUIPMENT THAT IS UNQUALIFIED

This category includes equipment items whose qualification documentation has been judged to be seriously deficient based upon review of (1) the documentation provided by the Licensee, or (2) applicable and available qualification documentation associated with the overall equipment environmental qualification program. The qualification documentation indicates serious deficiencies reported during testing; for example, severe anomalies or failure of the test specimen, which could affect the ability of the equipment to perform its safety function. NRC has requested immediate written notification when an equipment item is placed in this category during the course of the review.

- o NRC Category II.c  
EQUIPMENT THAT SATISFIES ALL APPLICABLE REQUIREMENTS OF THE DOR GUIDELINES OR NUREG-0588 WITH THE EXCEPTION OF QUALIFIED LIFE

This category includes equipment items that are acceptable on the basis that all applicable criteria defined in the DOR Guidelines or NUREG-0588 are satisfied with the exception of the qualified life criterion. The Licensee (1) has not evaluated qualified life or replacement schedule, (2) has not adequately evaluated qualified life or replacement schedule, or (3) has not adequately interpreted qualified life in terms of calendar time. [Note: The component replacement schedule discussed in Section 7.0 of the



DOR Guidelines is, in effect, a qualified life. It is not essential to use the term "qualified life," but the replacement schedule must be justified.]

o NRC Category III.a  
EQUIPMENT THAT IS EXEMPT FROM QUALIFICATION

This category includes equipment items that are exempt from qualification on the basis that (1) the equipment does not provide a safety function (i.e., should not have been included in the equipment list submitted by the Licensee), or (2) the specific safety-related function of the equipment can be accomplished by some other designated equipment that is fully qualified and satisfies the single failure criterion. In addition, any failure of the exempt equipment must not mislead the operator or degrade the ability of qualified equipment to perform its required safety-related function.

o NRC Category III.b  
EQUIPMENT NOT IN THE SCOPE OF THE QUALIFICATION REVIEW

This category includes equipment items addressed by the Licensee in the equipment environmental qualification submittals which are (1) required to achieve and maintain the plant in a cold shutdown condition or (2) located in a mild environment. Supplement 2 of IE Bulletin 79-01B 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 high energy line break (HELB) or to nuclear radiation emanating from circulation of fluids containing radioactive substances. Supplement 3 of IE Bulletin 79-01B permits deferment of the review of environmental qualification for all equipment required to achieve and maintain the plant in a cold shutdown condition. Supplements 2 and 3 of IE Bulletin 79-01B originally permitted deferment until after February 1, 1981 of the qualification review of equipment located in a mild environment or required to achieve and maintain the plant in a cold shutdown condition. Since the issuance of Supplements 2 and 3, the NRC has determined that the review of environmental qualification for this equipment is not within the scope of this report.

o NRC Category IV  
EQUIPMENT FOR WHICH QUALIFICATION DOCUMENTATION HAS NOT BEEN MADE AVAILABLE FOR REVIEW

This category includes equipment items for which qualification documentation in accordance with the requirements of the DOR Guidelines or NUREG-0588 has been cited by the Licensee as evidence of qualification; however, this documentation has not been made available for review. Therefore, a conclusion cannot be reached with respect to qualification of this equipment.

### 3.4 IMPLEMENTATION GUIDE FOR FULFILLING NRC CRITERIA

The NRC has requested that a detailed implementation guide for fulfilling NRC criteria be prepared as part of this assignment. The implementation guide will present a fully detailed discussion of the principal qualification criteria presented in the DOR Guidelines and NUREG-0588. The primary emphasis will be to clarify technical points, eliminate possible misconceptions, and clearly provide definitive guidance to enable licensees to understand and resolve, in an expeditious manner, qualification deficiencies identified as a result of this TER. The implementation guide (TER-C5257-532) has been prepared and issued to the NRC. The implementation guide is either appended to this TER or will be forwarded to the Licensee by the NRC under a separate letter. The Licensee is encouraged to review that document.

## 4. TECHNICAL EVALUATION

### 4.1 INTRODUCTION

The technical evaluation presented in this section represents the equipment environmental qualification (EEQ) assessment for each equipment item listed in Appendix B in accordance with the methodology presented in Section 3 of this report. The evaluations were conducted to identify any major deficiencies within the Licensee's equipment qualification program and to determine whether the Licensee (1) provided an adequate response to the SER concerns, (2) proposed adequate corrective actions to resolve qualification deficiencies, and (3) provided a schedule for completion of the corrective actions.

The evaluations are based on the available qualification documentation provided by the Licensee, complemented in several cases by other relevant technical information. The major qualification deficiencies that have been identified and the results of the evaluation are shown in the Equipment Environmental Qualification Summary Forms (Tables 4-1, 4-2, 4-3, and 4-4) presented in Section 4.2.

Observations concerning the Licensee's qualification methodology presented in response to the NRC SER are presented in Section 4.3.

Technical evaluations of the environmental qualification of the equipment items are presented in Section 4.4.

#### 4.2 SUMMARY OF THE EVALUATION

The following tabulations represent a summary of the results of the equipment environmental qualification evaluation conducted in accordance with the methodology presented in Section 3.

Table 4-1 summarizes the number of equipment items assigned to each NRC qualification category as a result of the evaluation.

Table 4-2 summarizes the number of equipment items found to have a specific qualification deficiency.

Table 4-3 summarizes the number of equipment items for which the Licensee has proposed a specific corrective action to resolve a qualification deficiency.

Table 4-4 consists of Equipment Environmental Qualification Summary Forms for the equipment items, identifying (1) compliance with the qualification requirements defined in Section 2, (2) the resultant NRC qualification category, and (3) the Licensee-proposed corrective action.

TABLE 4-1

## NUMBER OF EQUIPMENT ITEMS IN EACH QUALIFICATION CATEGORY

NRC CATEGORY	CATEGORY DESCRIPTION	NUMBER OF EQUIPMENT ITEMS
I.A	EQUIPMENT QUALIFIED----- [ EQUIPMENT ITEM NO(S).: 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 47, 79, 80, 81, 82, 49, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104 ]	30
I.B	EQUIPMENT QUALIFICATION PENDING MODIFICATION----- [ EQUIPMENT ITEM NO(S).: 4, 6, 7, 27, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 64, 70, 72, 73, 74, 76, 83, 84, 85, 86, 87, 88, 90, 91 ]	27
II.A	EQUIPMENT QUALIFICATION NOT ESTABLISHED----- [ EQUIPMENT ITEM NO(S).: 2, 3, 15, 23, 25, 31, 75, 77, 111, 112, 113 ]	11
II.B	EQUIPMENT NOT QUALIFIED-----	0
II.C	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCF T QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED----- [ EQUIPMENT ITEM NO(S).: 1, 5, 24, 26, 28, 29, 120, 120 ]	7
III.A	EQUIPMENT EXEMPT FROM QUALIFICATION-----	0
III.B	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW----- [ EQUIPMENT ITEM NO(S).: 20, 21, 22, 30, 35, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69, 71, 78, 105, 106, 107, 108, 109, 110, 114, 115, 116, 117, 118, 119, 121, 122, 123, 124, 125, 126, 127, 128, 129 ]	44
IV	DOCUMENTATION NOT MADE AVAILABLE-----	0
TOTAL		129

TABLE 4-2  
 QUALIFICATION DEFICIENCY SUMMARY

NRC REQUIREMENT	NUMBER OF DEFICIENT EQUIPMENT ITEMS
1. DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE----- [ EQUIPMENT ITEM NO(S).: 2, 3, 4, 15, 23, 25, 27, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 64, 72, 73, 74, 76, 77, 84, 85, 86, 87, 88, 90, 91, 111 ]	40
2. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED----- [ EQUIPMENT ITEM NO(S).: 31, 70, 75, 76, 77, 112, 113, 113 ]	7
3. AGING DEGRADATION EVALUATED ADEQUATELY----- [ EQUIPMENT ITEM NO(S).: 7, 24, 26, 31, 70, 76, 77, 77 ]	7
4. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)----- [ EQUIPMENT ITEM NO(S).: 1, 5, 6, 7, 24, 26, 28, 29, 31, 70, 76, 77 ]	12
5. PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION----- [ EQUIPMENT ITEM NO(S).: 70, 76 ]	2
6. CRITERIA REGARDING AGING SIMULATION (IF REQUIRED)----- [ EQUIPMENT ITEM NO(S).: 77 ]	1
7. CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:	
A. - PEAK TEMPERATURE ADEQUATE----- [ EQUIPMENT ITEM NO(S).: 83 ]	1
B. - PEAK PRESSURE ADEQUATE-----	0
C. - DURATION ADEQUATE-----	0
D. - REQUIRED PROFILE ENVELOPED ADEQUATELY----- [ EQUIPMENT ITEM NO(S).: 76 ]	1

Table 4-2 (Cont.)

QUALIFICATION DEFICIENCY SUMMARY

NRC REQUIREMENT	NUMBER OF DEFICIENT EQUIPMENT ITEMS
E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE----- [ EQUIPMENT ITEM NO(S).: 76 ]	1
8. CRITERIA REGARDING SPRAY SATISFIED-----	0
9. CRITERIA REGARDING SUBMERGENCE SATISFIED-----	0
10. CRITERIA REGARDING RADIATION SATISFIED----- [ EQUIPMENT ITEM NO(S).: 2, 3, 7, 76, 77, 83 ]	6
11. CRITERIA REGARDING TEST SEQUENCE SATISFIED-----	0
12. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED-----	0
13. CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED-----	0
14. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED-----	0
15. TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED---	0
16. CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)-	0

TABLE 4-3  
 LICENSEE CORRECTIVE ACTION SUMMARY

CORRECTIVE ACTION DESCRIPTION	NUMBER OF EQUIPMENT ITEMS
1. EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT----- [ EQUIPMENT ITEM NO(S): 4, 7, 8, 27, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 64, 70, 74, 75, 83, 84, 85, 86, 88, 91 ]	33
2. EQUIPMENT MODIFICATION-----	0
3. EQUIPMENT RELOCATION ABOVE SUBMERGENCE LEVEL-----	0
4. RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE-----	0
5. VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS-----	0
6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT-----	0
7. QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS----- [ EQUIPMENT ITEM NO(S): 73, 90 ]	2
8. OTHER (FOR DETAILED DESCRIPTION SEE SPECIFIC EQUIPMENT ITEMS)-- [ EQUIPMENT ITEM NO(S): 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 72 ]	14
SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED (SEE SPECIFIC EQUIPMENT ITEM FOR COMPLETION DATE)----- [ EQUIPMENT ITEM NO(S): 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 27, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 64, 70, 73, 74, 76, 83, 84, 85, 86, 88 ]	46



Table 4-4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE-----	X	X	X												X
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED-----															
3.	AGING DEGRADATION EVALUATED ADEQUATELY-----							X								
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)-----	X				X	X	X								
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION-----															
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)-----															
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:															
	A. - PEAK TEMPERATURE ADEQUATE-----															
	B. - PEAK PRESSURE ADEQUATE-----															
	C. - DURATION ADEQUATE-----															
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY-----															
	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE-----															
8.	CRITERIA REGARDING SPRAY SATISFIED-----															
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED-----															
10.	CRITERIA REGARDING RADIATION SATISFIED-----	X	X					X								
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED-----															
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED-----															
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED-----															
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED-----															
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED-----															
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)-----															
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																
I.A.	EQUIPMENT QUALIFIED-----							X	X	X	X	X	X	X	X	X
I.B.	EQUIPMENT QUALIFICATION PENDING MODIFICATION-----				X		X	X								
II.A.	EQUIPMENT QUALIFICATION NOT ESTABLISHED-----	X	X													X
II.B.	EQUIPMENT NOT QUALIFIED-----															
II.C.	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED-----	X				X										
III.A.	EQUIPMENT EXEMPT FROM QUALIFICATION-----															
III.B.	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW-----															
IV.	DOCUMENTATION NOT MADE AVAILABLE-----															
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT-----			X			X	X								
2.	EQUIPMENT MODIFICATION-----															
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL-----															
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE-----															
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS-----															
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT-----															
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS-----															
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)-----					X		X	X	X	X	X	X	X	X	X
	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED-----		X		X	X	X	X	X	X	X	X	X	X	X	X

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS																	
		01	06	10	17	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																			
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE									X			X		X				
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED																		
3.	AGING DEGRADATION EVALUATED ADEQUATELY										X		X						
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)										X		X		X	X			
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION																		
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)																		
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:																		
	A. - PEAK TEMPERATURE ADEQUATE																		
	B. - PEAK PRESSURE ADEQUATE																		
	C. - DURATION ADEQUATE																		
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY																		
	E. - SF6 GAS EXPOSURE (IF REQUIRED) ADEQUATE																		
8.	CRITERIA REGARDING SPRAY SATISFIED																		
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED																		
10.	CRITERIA REGARDING RADIATION SATISFIED																		
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED																		
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED																		
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED																		
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED																		
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED																		
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)																		
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																			
I.A	EQUIPMENT QUALIFIED	X	X	X	X														
I.B	EQUIPMENT QUALIFICATION PENDING MODIFICATION															X			
II.A	EQUIPMENT QUALIFICATION NOT ESTABLISHED									X		X							
II.B	EQUIPMENT NOT QUALIFIED																		
II.C	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED										X	X	X	X	X	X			
III.A	EQUIPMENT EXEMPT FROM QUALIFICATION																		
III.B	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW					X	X	X											X
IV	DOCUMENTATION NOT MADE AVAILABLE																		
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																			
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT														X				
2.	EQUIPMENT MODIFICATION																		
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL																		
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE																		
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS																		
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT																		
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS																		
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)	X	X	X	X						X								
	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED	X	X	X	X						X				X				

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																	
1	1. DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE-----	X	X	X			X	X	X	X	X	X	X	X	X	X	X
1	2. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED-----	X															
1	3. AGING DEGRADATION EVALUATED ADEQUATELY-----	X															
1	4. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)-----	X															
1	5. PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION-----																
1	6. CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)-----																
1	7. CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:																
1	A. - PEAK TEMPERATURE ADEQUATE-----																
1	B. - PEAK PRESSURE ADEQUATE-----																
1	C. - DURATION ADEQUATE-----																
1	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY-----																
1	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE-----																
1	8. CRITERIA REGARDING SPRAY SATISFIED-----																
1	9. CRITERIA REGARDING SUBMERGENCE SATISFIED-----																
1	10. CRITERIA REGARDING RADIATION SATISFIED-----																
1	11. CRITERIA REGARDING TEST SEQUENCE SATISFIED-----																
1	12. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED-----																
1	13. CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED-----																
1	14. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED-----																
1	15. TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED-----																
1	16. CRITERIA REGARDING MARGINS SATISFIED (NUREG-0589, CAT. 1)-----																
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																	
1	I.A. EQUIPMENT QUALIFIED-----																
1	I.B. EQUIPMENT QUALIFICATION PENDING MODIFICATION-----	X	X	X			X	X	X	X	X	X	X	X	X	X	X
1	II.A. EQUIPMENT QUALIFICATION NOT ESTABLISHED-----	X															
1	II.B. EQUIPMENT NOT QUALIFIED-----																
1	II.C. EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED-----																
1	III.A. EQUIPMENT EXEMPT FROM QUALIFICATION-----																
1	III.B. EQUIPMENT NOT IN THE SCOPE OF THE REVIEW-----						X										
1	IV. DOCUMENTATION NOT MADE AVAILABLE-----																
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																	
1	1. EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT-----	X	X	X			X	X	X	X	X	X	X	X	X	X	X
1	2. EQUIPMENT MODIFICATION-----																
1	3. EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL-----																
1	4. RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE-----																
1	5. VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS-----																
1	6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT-----																
1	7. QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS-----																
1	8. OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)-----																
1	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED-----	X	X	X			X	X	X	X	X	X	X	X	X	X	X

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS															
		1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																	
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE-----	X		X	X	X	X	X									
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED-----																
3.	AGING DEGRADATION EVALUATED ADEQUATELY-----																
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)-----																
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION-----																
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)-----																
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:																
	A. - PEAK TEMPERATURE ADEQUATE-----																
	B. - PEAK PRESSURE ADEQUATE-----																
	C. - DURATION ADEQUATE-----																
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY-----																
	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE-----																
8.	CRITERIA REGARDING SPRAY SATISFIED-----																
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED-----																
10.	CRITERIA REGARDING RADIATION SATISFIED-----																
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED-----																
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED-----																
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED-----																
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED-----																
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED-----																
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)-----																
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																	
I.A.	EQUIPMENT QUALIFIED-----		X														
I.B.	EQUIPMENT QUALIFICATION PENDING MODIFICATION-----	X		X	X	X	X	X									
II.A.	EQUIPMENT QUALIFICATION NOT ESTABLISHED-----																
II.B.	EQUIPMENT NOT QUALIFIED-----																
II.C.	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED-----																
III.A.	EQUIPMENT EXEMPT FROM QUALIFICATION-----																
III.B.	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW-----								X	X	X	X	X	X	X	X	
IV.	DOCUMENTATION NOT MADE AVAILABLE-----																
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																	
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT-----	X		X	X	X	X	X									
2.	EQUIPMENT MODIFICATION-----																
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL-----																
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE-----																
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS-----																
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT-----																
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS-----																
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)-----																
	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED-----	X		X	X	X	X	X									

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM  
 =====

		FPC EQUIPMENT ITEM NUMBERS														
		1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE				X								X	X	X	
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED															
3.	AGING DEGRADATION EVALUATED ADEQUATELY									X						X
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)									X						
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION									X						
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)															
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:															
	A. - PEAK TEMPERATURE ADEQUATE															
	B. - PEAK PRESSURE ADEQUATE															
	C. - DURATION ADEQUATE															
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY															
	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE															
8.	CRITERIA REGARDING SPRAY SATISFIED															
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED															
10.	CRITERIA REGARDING RADIATION SATISFIED															
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED															
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED															
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED															
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED															
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED															
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0500, CAT. 1)															
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																
I.A.	EQUIPMENT QUALIFIED															
I.B.	EQUIPMENT QUALIFICATION PENDING MODIFICATION				X					X		X	X	X	X	
II.A.	EQUIPMENT QUALIFICATION NOT ESTABLISHED															X
II.B.	EQUIPMENT NOT QUALIFIED															
II.C.	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED															
III.A.	EQUIPMENT EXEMPT FROM QUALIFICATION															
III.B.	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW	X	X	X		X	X	X	X	X		X				
IV.	DOCUMENTATION NOT MADE AVAILABLE															
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT				X					X					X	
2.	EQUIPMENT MODIFICATION															
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL															
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE															
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS															
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT															
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS														X	
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)												X			
	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED			X						X			X	X		

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS															
		1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																	
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE	X	X							X	X	X	X	X	X	X	X
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED	X	X														
3.	AGING DEGRADATION EVALUATED ADEQUATELY	X	X														
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)	X	X														
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION	X															
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)	X															
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:																
	A. - PEAK TEMPERATURE ADEQUATE								X								
	B. - PEAK PRESSURE ADEQUATE																
	C. - DURATION ADEQUATE																
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY	X															
	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE	X															
8.	CRITERIA REGARDING SPRAY SATISFIED																
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED																
10.	CRITERIA REGARDING RADIATION SATISFIED	X	X						X								
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED																
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED																
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED																
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED																
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED																
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)																
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																	
I.A.	EQUIPMENT QUALIFIED				X	X	X	X								X	
I.B.	EQUIPMENT QUALIFICATION PENDING MODIFICATION	X							X	X	X	X	X	X	X	X	X
II.A.	EQUIPMENT QUALIFICATION NOT ESTABLISHED		X														
II.B.	EQUIPMENT NOT QUALIFIED																
II.C.	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED																
III.A.	EQUIPMENT EXEMPT FROM QUALIFICATION																
III.B.	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW			X													
IV.	DOCUMENTATION NOT MADE AVAILABLE																
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																	
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT	X							X	X	X	X	X	X	X	X	X
2.	EQUIPMENT MODIFICATION																
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL																
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE																
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS																
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT																
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS																X
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)																
	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED	X							X	X	X	X	X	X	X	X	X

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS														
		1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105
1	NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)															
1	1. DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE-----	X														
1	2. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED-----															
1	3. AGING DEGRADATION EVALUATED ADEQUATELY-----															
1	4. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)-----															
1	5. PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION-----															
1	6. CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)-----															
1	7. CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:															
1	A. - PEAK TEMPERATURE ADEQUATE-----															
1	B. - PEAK PRESSURE ADEQUATE-----															
1	C. - DURATION ADEQUATE-----															
1	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY-----															
1	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE-----															
1	8. CRITERIA REGARDING SPRAY SATISFIED-----															
1	9. CRITERIA REGARDING SUBMERGENCE SATISFIED-----															
1	10. CRITERIA REGARDING RADIATION SATISFIED-----															
1	11. CRITERIA REGARDING TEST SEQUENCE SATISFIED-----															
1	12. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED-----															
1	13. CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED-----															
1	14. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED-----															
1	15. TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED-----															
1	16. CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)-----															
1	NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)															
1	I.A. EQUIPMENT QUALIFIED-----	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	I.B. EQUIPMENT QUALIFICATION PENDING MODIFICATION-----	X														
1	II.A. EQUIPMENT QUALIFICATION NOT ESTABLISHED-----															
1	II.B. EQUIPMENT NOT QUALIFIED-----															
1	II.C. EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED-----															
1	III.A. EQUIPMENT EXEMPT FROM QUALIFICATION-----															
1	III.B. EQUIPMENT NOT IN THE SCOPE OF THE REVIEW-----															X
1	IV. DOCUMENTATION NOT MADE AVAILABLE-----															
1	CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)															
1	1. EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT-----	X														
1	2. EQUIPMENT MODIFICATION-----															
1	3. EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL-----															
1	4. RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE-----															
1	5. VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS-----															
1	6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT-----															
1	7. QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS-----															
1	8. OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)-----															
1	SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED-----															

Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)																					
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE					X															
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED							X	X												
3.	AGING DEGRADATION EVALUATED ADEQUATELY																				
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)																				
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION																				
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)																				
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE																				
	A. - PEAK TEMPERATURE ADEQUATE																				
	B. - PEAK PRESSURE ADEQUATE																				
	C. - DURATION ADEQUATE																				
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY																				
	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE																				
8.	CRITERIA REGARDING SPRAY SATISFIED																				
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED																				
10.	CRITERIA REGARDING RADIATION SATISFIED																				
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED																				
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED																				
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED																				
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED																				
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED																				
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)																				
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)																					
I.A	EQUIPMENT QUALIFIED																				
I.B	EQUIPMENT QUALIFICATION PENDING MODIFICATION																				
II.A	EQUIPMENT QUALIFICATION NOT ESTABLISHED							X	X	X											
II.B	EQUIPMENT NOT QUALIFIED																				
II.C	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED																				X
III.A	EQUIPMENT EXEMPT FROM QUALIFICATION																				
III.B	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW	X	X	X	X	X							X	X	X	X	X	X	X	X	X
IV	DOCUMENTATION NOT MADE AVAILABLE																				
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)																					
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT																				
2.	EQUIPMENT MODIFICATION																				
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL																				
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE																				
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS																				
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT																				
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS																				
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)																				
SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED																					



Table 4-4 (Cont.)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		FRC EQUIPMENT ITEM NUMBERS									
		121	122	123	124	125	126	127	128	129	
NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)											
1.	DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE										
2.	ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED										
3.	AGING DEGRADATION EVALUATED ADEQUATELY										
4.	QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)										
5.	PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION										
6.	CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)										
7.	CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:										
	A. - PEAK TEMPERATURE ADEQUATE										
	B. - PEAK PRESSURE ADEQUATE										
	C. - DURATION ADEQUATE										
	D. - REQUIRED PROFILE ENVELOPED ADEQUATELY										
	E. - STEAM EXPOSURE (IF REQUIRED) ADEQUATE										
8.	CRITERIA REGARDING SPRAY SATISFIED										
9.	CRITERIA REGARDING SUBMERGENCE SATISFIED										
10.	CRITERIA REGARDING RADIATION SATISFIED										
11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED										
12.	CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES (IF ANY) SATISFIED										
13.	CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED										
14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED										
15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED										
16.	CRITERIA REGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)										
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)											
I.A	EQUIPMENT QUALIFIED										
I.B	EQUIPMENT QUALIFICATION PENDING MODIFICATION										
II.A	EQUIPMENT QUALIFICATION NOT ESTABLISHED										
II.B	EQUIPMENT NOT QUALIFIED										
II.C	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED										
III.A	EQUIPMENT EXEMPT FROM QUALIFICATION										
III.B	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW	X	X	X	X	X	X	X	X	X	X
IV	DOCUMENTATION NOT MADE AVAILABLE										
CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)											
1.	EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT										
2.	EQUIPMENT MODIFICATION										
3.	EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL										
4.	RELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE										
5.	VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS										
6.	EQUIPMENT RELOCATION TO A MILD ENVIRONMENT										
7.	QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS										
8.	OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)										
SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED											

#### 4.3 METHODOLOGY USED BY THE LICENSEE

This section includes observations concerning the Licensee's qualification methodology presented in the response [22] to the NRC SER.

##### 4.3.1 Aging and Qualified Life

The NRC SER [21] on Millstone Unit 1 stated the following concerns.

"The DOR Guidelines, section 7, does not require a qualified life to be established for all safety related electrical equipment, however, the following actions are required:

1. Detailed comparison of existing equipment to the materials identified in Appendix C of the DOR guidelines. The first supplement to IEB-79-01B requires the licensees to utilize the table and identify any additional materials as a result of their effort.
2. Establish an ongoing program to review surveillance and maintenance records to identify potential age related degradations.
3. Establish component maintenance and replacement schedules which include considerations of aging characteristics of the installed components.

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

In Reference 22, the Licensee provided the following description of the aging, maintenance, and surveillance program in effect at Millstone Unit 1 to resolve the NRC concerns:

"Equipment which is subjected to harsh environments caused by a LOCA or High Energy Line Breaks (HELB) and which must operate to mitigate the consequences of those accidents is required to be environmentally qualified. Part of this qualification requires that the equipment be shown to operate successfully in an end-of-life condition.

To address this question, NUSCO has retained Wyle Laboratories to perform aging analysis for components which fall into this category.

Normal radiation and temperature data were obtained from plant operating records and from in-service surveys conducted during the summer of 1980. Operating temperature surveys were performed during the hottest days of 1980 in the areas surrounding the Category 1 equipment and this

information represents the Normal Maximum Temperature that the equipment would be subjected to throughout its design life. Additional conservatism was added in the aging analysis by assuming that the equipment would be exposed continually to these temperatures, giving no credit to seasonal and operational differences in ambient temperatures.

Identification of age sensitive components within the equipment is made increasingly more difficult with increasing age of the equipment. Although the analysis is not yet complete, there remains a high degree of confidence that the results will yield a satisfactory qualified life for components identified in the System Component Evaluation Work Sheets (SCEWS). In conformance with the Commission's May 23, 1980 Order, NUSCO has committed to a program of replacement, where this information is determined to be lacking. Additionally, justification for continued operation is included to provide the Staff full and complete information in accordance with the Order.

Since the docketing of Reference (27) [8], significant progress has been made towards resolution of the aging question and updates to individual SCEWS are included in Appendix II as a result of data obtained from our consultant, Wyle Laboratories, and other sources. In response to the verbal Staff guidance at the July 7-10 meetings, attached please find a summary of NNECO's Surveillance and Preventive Maintenance Program which addresses safety-related electrical equipment in harsh environments. In conjunction with the data on individual components indicated on the SCEW Sheets, NNECO concludes that the attached program fully complies with NRC requirements, as clarified by the Staff.

#### MILLSTONE UNIT NO. 1

##### PREVENTIVE MAINTENANCE PROGRAM ELECTRICAL, INSTRUMENTATION AND CONTROL EQUIPMENT

The responsibility for Maintenance of Electrical, Instrumentation and Control Equipment is split among 3 entities at Millstone Unit 1. They are the Maintenance Department, Instrumentation and Control Department, and the Production Test Department. For those equipment which are part of a required surveillance, as part of the Safety Technical Specifications, an additional group, Plant Operations, performs regular tests to assure adequate operation. Where test tolerances are not met, Operations issues a maintenance request to the proper maintenance entity. Work done under this maintenance request requires appropriate Quality Assurance follow. For any given equipment type, a lead discipline is assigned and support is requested of the remaining In-Service Inspection Team at Millstone Unit 1, which is responsible for the operability of mechanical devices such as, valves, pumps and piping. The drivers for the valves and pumps are not in this group's jurisdiction. However, should the tolerance of the mechanical device be exceeded, it

may well be a problem with the Electrical Instrumentation and Control equipment. In that case the proper maintenance group would be called for assistance.

#### RESPONSIBILITIES

1. The Unit 1 Maintenance and Instrument and Control Supervisors are responsible for ensuring that equipment assigned to their department is maintained, calibrated and tested to insure continued operability.
2. The NUSCO Production Test Field Supervisor is responsible for ensuring that equipment assigned to the NUSCO Production Test Department is maintained, calibrated and tested to insure continued operability.
3. The Unit 1 Superintendent is responsible for resolving any differences and making appropriate assignments to insure that the Unit electrical equipment is maintained, calibrated and tested to insure continued operability.

The following table defines the area of responsibility for the Maintenance, Instrumentation and Control and Production Test Departments.

<u>ITEM</u>	<u>LEAD RESPONSIBILITY</u>
1. Generator (main, diesel, gas turbine)	
a. Brush rigging, slip rings, amplidyne, etc.	Maintenance
b. Hypot, regulator testing and maintenance, relaying	Production Test
2. Motor testing (all motors up to 4KV)	Maintenance
3. Protective relay calibration and trip testing	Production Test
4. Transformer Testing	
a. Inside transformers	Maintenance
b. Outside transformers	Production Test
5. Emergency/Vital Power Systems includes inverters, DG electrical controls, G/T electrical controls and battery chargers	Maintenance
6. Plant power metering calibration	Production Test
7. Transducer calibration	Production Test

<u>ITEM</u>	<u>LEAD RESPONSIBILITY</u>
8. 480/120/125 volt switchgear	Maintenance
9. Batteries	Maintenance
10. Electrical testing of modifications	
a. NUSCO projects	Production Test
b. NNECO projects	Maintenance
11. Reactor Recirc System	
a. MG motor and generator	Maintenance
b. Start logic and protective relaying	Production Test
12. Refueling equipment	Maintenance
13. 4KV Switchgear	
a. Breaker/buswork	Maintenance
b. Control/protection on feeders/ties	Production Test
14. PA Systems, sirens	Maintenance
15. Instrumentation	I & C

#### MAINTENANCE DEPARTMENT

The Maintenance Department has a computerized listing of all the equipment for which they have lead responsibility. This listing includes the equipment number, preventive maintenance procedure reference, frequency of preventive maintenance, schedule for the preventive maintenance and definition of type of preventive maintenance to be performed.

#### INSTRUMENTATION AND CONTROL DEPARTMENT

The Millstone Unit 1 Instrumentation and Controls Department utilizes the computer run developed by the architect engineer (MS-60) in conjunction with a manual filing system to assure all preventive maintenance and calibration is performed on schedule.

### PRODUCTION TEST

The Production Test Department maintains a file on all of the equipment for which they have lead responsibility. Each equipment type has an approved procedure for maintenance and calibration of that device.

### REPLACEMENT OF THE MS-60 LISTING

A new computerized listing is in the process of being developed for the Instrumentation and Control Department. It will be an interactive program which will allow the engineers and technicians to sort the list by any one of a number of parameters. Provisions are being made for inclusion of Preventive Maintenance and Environmental Qualification information. Once operational, the program may be used by Maintenance and Production Test to encode their records.

### INCORPORATION OF ENVIRONMENTAL QUALIFICATION INFORMATION

The July 7-10, 1981 meeting with the NRC Staff revised our understanding of the term 'Qualified Life'. The DOR Guidelines required NNECO to determine the 'Qualified Life' for each equipment item which is required to function in a harsh environment. This information is presented on the system component evaluation work sheet. Prior to the meeting it was understood that where qualified life exceeded plant life no specific maintenance was to be required for equipment environmental qualification. Subsequently the Staff verbally requested NNECO to include all harsh environment equipment in their surveillance and maintenance programs to verify calculations and/or detect unexpected age related degradations. This is due to the technical uncertainties that exist in the scientific community regarding prediction of aging mechanisms.

Table 1 lists the Generic Equipment Items at Millstone Unit 1 which will be included in this program. Included in the Table is the surveillance required and the schedule for each preventive maintenance item.

The majority of the surveillance and preventive maintenance which is done on this equipment is currently performed on a periodic basis. However, there are a few items, such as terminal blocks, where new surveillances will be added to the procedures to address these unknown aging mechanisms.

For equipment items which contain numerous samples in similar normal environments, such as cable, penetrations and terminal blocks, representative samples will be tested on a periodic basis.

The Surveillance and Preventive Maintenance Procedures contain visual inspections, where applicable, to observe any indications of postulated aging degradations. In those equipment where accelerated pre-aging was included in the harsh environment testing program, such as with cable and splices, visual inspection may be the only surveillance performed on a regular basis.

A program to ensure that data are available for trending and data are collected for all Harsh Environment Equipment will be in full force by June 30, 1982.

## ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

## MILLSTONE UNIT 1

TABLE 1

SURVEILLANCE AND PREVENTIVE MAINTENANCE OF EQUIPMENT  
LOCATED IN A HARSH ENVIRONMENT(TESTS WHICH VERIFY AGING ANALYSIS)

<u>Generic Equipment</u>	<u>Surveillance (Preventive Maintenance)</u>	<u>Period</u>
→ KV Motors	IR Test Hi-Pot Test	Each refueling Each refueling
Motor Operators (MOV's)	IR Test Operation Time	See Note 1 See Note 2
Solenoid Valves	Qualified SV's are replaced well before they reach their qualified life. Inspections of replaced SV's IR, minimum pickup voltage and maximum drop out voltage will verify assumptions used in aging analysis.	Three (3) years
Limit Switches	Visual Inspection Replace gaskets	Two (2) years Two (2) years
<u>Cable and Terminations</u>		
4 KV Power	IR Test Hi-Pot Test	Each refueling Each refueling
<u>Cable and Terminations</u>		
LV Power Control Instrumentation	Visual Inspection	Ten (10) years
Penetrations	Leak Rate IR Test	Each refueling Ten (10) years

## ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

TABLE 1 (CONT.)

<u>Generic Equipment</u>	<u>Surveillance (Preventive Maintenance)</u>	<u>Period</u>
Misc. Terminations (See Note 4)	IR Test Visual Inspection	Ten (10) years Ten (10) years
<u>Instrumentation</u>		
Transmitters Radiation Detector Accelerometer Pre-Amp Pressure Switches RTD's Flow and Level Switches Relays	Calibration Runs	Each Refueling

NOTESNote 1

A rolling schedule will be maintained such that all MOVs are fully inspected at least once every five (5) years.

Note 2

Valve stroke time is verified in the in-service inspection program and not necessarily done during refueling outage.

Note 3

IR test of terminations may be done as part of overall system test.

Note 4

For termination systems where accelerated aging was not included as part of the harsh environment test program, IR Testing will be incorporated into the surveillance procedure."



The Licensee response resolves the NRC SER concern. It is suggested that (1) vendor maintenance/replacement schedules for specific equipment and (2) replacement schedules for components, sub-components, and materials, based on degradation, be considered in addition to the schedule identified in Table 1.

#### 4.3.2 Completeness of Equipment List

In Reference 8, the Licensee states:

##### "ENCLOSURES TO EQUIPMENT TO MAINTAIN AMBIENT CONDITIONS

To fulfill NRC requirements on the issue of environmental qualification, in certain instances, Northeast Nuclear Energy Company has opted to provide enclosures or environmentally controlled areas in the Reactor Building and the Turbine Building at Millstone Unit No. 1. The modifications are scheduled for completion during the current refueling outage; consequently, these components will not be exposed to harsh environments as a result of a LOCA or HELB. These environmentally controlled areas will isolate certain electrical, instrumentation, and control equipment from a potentially hostile environment.

The following outlines the modifications in progress:

- o In the Turbine Building, an Environmentally Controlled Switchgear Room will be constructed by enclosing the existing Mezzanine Floor at Elevation 34'6". A new seismic Class 1 HVAC system will be installed to provide the necessary ventilation. The new Environmentally Controlled Switchgear Room will isolate all safety-related electrical systems located in the Turbine Building from the hostile environment.
- o Structural modifications to the existing HVAC Equipment Room will be completed to isolate the Control Room Ventilation System, Standby Gas Treatment System, the Turbine Building HVAC System, and the Reactor Building HVAC System from the hostile environment.
- o A new Ventilation System will be provided for the Emergency Diesel Generator Room which will protect the Emergency Diesel Generator from a hostile environment.
- o Structural modifications to the existing Pipe Tunnel will be completed which will isolate the Reactor Building from a Main Steam Line Break in the Pipe Tunnel. A new ventilation system will be installed which will maintain the Pipe Tunnel at a slightly negative pressure, up to about -0.25" Wg.
- o Seismic enclosures will be installed to isolate from the hostile environment the following instrument racks: 2205, 2206, 2257, 2201A, and 2201B.

- o Seismic enclosures will be installed to isolate from the hostile environment the following MCC's: DC-11A-1, DC-11A-2, 2-3, 2-3NE, 2A-3, and 2A-3NE.

Specific safety-related components protected by the above-described modifications are identified in Appendix IV."

The Licensee deleted SCEW sheets for affected equipment.

With regard to the completeness of the listing of safety-related equipment requiring qualification, the NRC SER [21] stated:

"The staff has determined and verified that the systems considered by the Licensee are those required to achieve or support: (1) emergency reactor shutdown, (2) containment isolation, (3) reactor core cooling, (4) containment heat removal, (5) core residual heat removal, and (6) prevention of significant release of radioactive material to the environment. In certain instances NNECO has opted to provide enclosures or environmentally controlled areas in the reactor building and the turbine building. No specific details of the enclosures or HVAC systems have been included in the Licensee's submittal. The Licensee must provide this information per paragraph 6.0 of this report."

In the 90-day response [22] to the NRC SER [21], the Licensee provided the following information:

"E. GENERAL COMMENTS ON ENVIRONMENTAL ENCLOSURES

In Section 3.1 of Reference (36) [NRC-EER], the Staff requested NNECO to provide details of the environmental enclosures or HVAC systems to respond to paragraph 6.0 of Reference (36), yet Section 6.0 was not transmitted to NNECO at that time. NNECO's Reference (37) response identified this discrepancy, but reiterated its position that design of the enclosure ensured that the mild environment would be maintained in the event of a HELB.

The Staff position of Section 3.1 was repeated in Reference (43) [21], with the exception that Section 6.0 was also transmitted to NNECO. However, it does not appear to NNECO that Section 6.0 of Reference (43) [21] requires any additional information to be presented on environmental enclosures, as the issue is not raised in Section 6.0.

In the interest of responding to Reference (43) [21] in its entirety, NNECO hereby responds to the concerns raised in Section 4.1.2.5 of the FRC-prepared TER. This section of the TER provides the FRC perspective on the design criteria appropriate for these enclosures.

Responses to the FRC general comments are as follows:

Comment a

Particular attention must be paid to the design of enclosures for the pressure conditions that may occur under accident conditions.

Response to Comment a

NNECO has considered in the design of all modifications, the pressure conditions which may occur under the accident conditions. A design pressure of 0.5 psig was used for all design bases external of the Pipe Tunnel. The design value for Pipe Tunnel modification was 2.5 psig.

Comment b

All electrical equipment used to maintain the environment within the enclosures in the "normal range" must be identified and qualified.

Response to Comment b

Electrical equipment used to maintain the environment within the enclosure in the normal range is not required for accident mitigation. The temperature range during the accident condition is 212°F for a period of 24 seconds. This temperature range and period of time would have negligible effect on the environment within the enclosure.

The following design summary is intended to respond to the remaining six FRC concerns identified in Section 4.1.2.5.

MECHANICAL

QA Category I Design

- o All QA Category I piping system modifications are designed in accordance with ASME III Class 3 or ASME III Class 2 requirements, and are seismically supported to the design requirements as outlined in the included section on structural.
- o All QA Category I HVAC system modifications are designed in accordance with SMACNA and are seismically supported to the design requirements as outlined in the included section on structural. All QA Class I HVAC Duct system designs take into consideration the pressure conditions that may occur under the projected accident conditions.

Non-QA Category I Design

- o All Non-QA Category I piping system modifications are designed in accordance with ANSI B31.1.0 and are not seismically supported. Valve design meets ANSI B16.34 requirements.

- o All Non-Class I HVAC system modifications are designed in accordance with SMACNA standards.

## ELECTRICAL

### Category 1E Design

- o All Category 1E system modifications are designed in accordance with the following criteria:

- |               |  |
|---------------|--|
| IEEE-336-1977 | - Standard Procedure for Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations. |
| IEEE-323-1974 | - Qualifying Class 1E Equipment for Nuclear Power Generating Stations.   |
| IEEE-344-1975 | - Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations.   |
| IEEE-384-1977 | - Standard Criteria for Independence of Class 1E Equipment and Circuits  |

### Non-Category 1E Design

- o All Non-Category 1E system modifications are designed in accordance with the following criteria:

- |                   |   |
|-------------------|---|
| ANSI/NFPA 70-1981 | - National Electrical Code  |
| IEEE-241-1974     | - Recommended Practice for Electric Power Systems in Commercial Buildings |

## STRUCTURAL

Structural modifications are designed in accordance with the following criteria:

- o All structural designs conform with the provisions of Part 1 of the American Institute of Steel Construction, 'Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.'
- o Welding design and requirements conform with AISC and PWS D1.1.
- o Loading conditions are combined to give the worst case combination of dead load, live load, pressure, earthquake and wind load where applicable.

- o Seismic design basis for all modifications require that the modifications be designed in the rigid range with a natural frequency greater than 20 Hz.
- o Wind loads where applicable are based on a 140 mph velocity.
- o All drilled in concrete anchors are Hilti Qwik Bolts designed in accordance with the Hilti manual with a factor of safety of 4.0.
- o All structural designs take into consideration the pressure conditions that may occur under the projected accident conditions.

A comparison of the above information with the FRC concerns indicates a discrepancy in only one instance, that being that loss of the controlled environment is not alarmed in the control room. NNECO has opted to assure controlled environment integrity by twice per shift checks of the enclosures. Details of the shift checks are available in Plant Equipment Check Log 1-ops-10.09, which is available for audit on-site."

The Licensee has responded and resolved the questions concerning the environmental enclosures except for comment b. The intent of comment b was to ensure that the new HVAC equipment (installed to maintain environmental conditions within the enclosures) is qualified for the environment to which it could be exposed during a design basis accident.

It should be noted that radiation was one of the harsh environmental parameters identified on the original SCEW sheets for equipment for which environmental enclosures were to be provided. The equipment that could be subjected to  $10^5$  to  $2 \times 10^6$  rd radiation (plant-specific conditions) is located in the reactor building and the steam tunnel. Although the radiation dose specified in Reference 27 was preliminary and the radiation values were modified in Reference 8, it is not apparent that the enclosures provide shielding to reduce the normal and accident dose to levels that would be insignificant.

The Licensee should ensure that (1) the enclosures described in Reference 22 provide sufficient shielding to preclude a harsh radiation environment and (2) the HVAC equipment which maintains environmental control is either located in a non-harsh environment or qualified for the environment to which it is exposed under accident conditions.

### 4.3.3 Environmental Service Conditions

#### 4.3.3.1 Containment Spray System

The NRC SER [21] states:

"The staff assumed that for plants designed and equipped with an automatic containment spray system, which satisfies the single failure criterion, the main steam line break environmental conditions are enveloped by the large break LOCA environmental conditions. The staff assumed, and requires that the Licensee verify, that the containment spray system is not subjected to a disabling single component failure and therefore satisfies the DOR Guideline requirements of Section 4.2.1."

In the 90-day response [22] to the SER, the Licensee stated:

"As originally noted in Reference (37) [NRC-EER], NNECO takes exception to the Staff position of Section 3.2 of Reference (43) [21] that NNECO should verify that the containment spray system is not subjected to a disabling single component failure. This statement is not applicable as the containment spray system is not credited in any accident analysis. Further, this manually-initiated system is completely redundant from the power sources to the valves; therefore, the system complies with the single failure criterion."

The Licensee has resolved this concern [21].

#### 4.3.3.2 Temperature, Pressure, and Humidity Conditions Inside Containment

The NRC SER [21] indicated a concern about the environmental parameters used as stated below:

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

The Licensee's specified temperature (service condition) of 273°F does not satisfy the above requirement. Furthermore, the Licensee-specified pressure is low as compared to the plants of similar design. The Licensee is requested to verify that the pressure profile in the FSAR was calculated based on the code requirements defined in NUREG-0588. If, by using these codes, the peak containment pressure is still 26 psig, then 20°F above the steam saturation temperature corresponding to the new pressure profile should be used. If however the calculated peak pressure is higher than 26 psig then the 20°F above the steam saturation temperature corresponding to the new pressure profile should be used."

The Licensee (NNECO) responded to the concern in Reference 22:

"In Reference (36) [NRC-EER] the Staff alleged that insufficient information was provided to substantiate the validity of the values specified. NNECO has subsequently been informed that the basis for the Staff position was that the values utilized did not satisfy the Staff's 'screening criteria,' as defined in the July 7-10 meeting.

NNECO responded to these alleged deficiencies in Reference (37). Although Reference (39) was docketed over three months prior to the issuance of Reference (45) [21], Reference (43) [21] is identical in content to Reference (36) with respect to temperature and pressure inside containment. This suggests to NNECO that the Staff either failed to review or failed to understand Reference (37).

In addition to the above data, and in response to Reference (40), NNECO docketed Reference (42). The subject matter of Reference (42) was SEP Topics VI-2.D, Mass and Energy Release and Postulated Pipe Breaks Inside Containment, and VI-3, Containment Pressure and Heat Removal Capability, as well as Environmental Qualification. The Reference (42) information was intended to facilitate the Staff's modeling efforts regarding mass/energy releases and subsequent containment response.

Subsequent to the issuance of the SER, by Reference (48), NNECO amended the Reference (37) response regarding the limiting containment pressure profile. The limiting pressure profile was indicated to be that presented in Figure 5.2.3.3.4 of the Millstone Unit No. 1 FSAR.

The information presented in Reference (37), as amended by Reference (48), constitutes NNECO's position on the issue. The results in Section 3.3 of the SER should read:

	<u>Temperature</u>	<u>Pressure</u>	<u>Humidity</u>
LOCA	Bounded by MSLB	43 psig	100%
MSLB	273°F	26 psig	100%

The SCEW sheets provided in Appendix II reflected the above limiting conditions, namely 43 psig and 273°F. The methods used to generate the limiting temperature profile were consistent with those of GESSAR Appendix 3B, as specified in Item 1.1(2) of NUREG-0588. Comments on the Staff suggestion of an arbitrary 20°F margin were provided in Reference (37)."

Subsequently, the Licensee provided the following information in Reference 42:

"In Section B.1 of Reference (2) [22], NNECO presented the temperature profile to which equipment located within the drywell was evaluated. The peak temperature associated with this profile was 273°F. NNECO has

recently been informed, by its contractor for this calculation, of some concern regarding the methodology employed to determine the appropriate temperature profile. The basis for calling this calculation into question concerns an excessive credit for revaporization which results in an artificial lowering of the calculated peak temperature during a postulated small main steam line break. The precise impact of this non-conservative assumption on the results of the calculation has not been quantified as of this date.

NNECO has evaluated the implications of this concern and has concluded that the only issue which requires further evaluation is that of environmental qualification of electrical equipment. In the absence of a precise quantification of the impact, NNECO has opted to exercise the alternative identified by the Staff in Section 3.3 of Reference (1) and in Staff clarifications issued by Generic Letter 82-09 regarding determination of appropriate peak temperatures within the drywell for boiling water reactors. This option consists of evaluating equipment to a temperature which is 20 degrees higher than the saturation temperature associated with the calculated peak pressure for any design basis accident initiated within the drywell. As discussed in Section B.2 of Reference (2), the peak pressure transient occurs for the loss of coolant accident and results in a calculated peak pressure of 43.0 psig. Adding 20°F to the saturation temperature corresponding to this peak pressure results in a new temperature peak of 310°F."

The Licensee's environmental parameters as stated above are used in this Technical Evaluation Report.

#### 4.3.3.3 Chemical Spray

With regard to chemical spray, the NRC expressed the following concern [21]:

"The methodology and guidance for developing chemical spray criteria was provided by the DOR Guidelines and NUREG-0588. The Licensee has stated that the containment spray system (demineralized water) is used to cool the drywell after a LOCA or MSLB inside primary containment, however, no credit is taken for this action in the safety analyses. Since spray can be used, any equipment upon which it impinges must be qualified for the spray parameter. For the purpose of this review, the effects of spray will be considered unresolved."

The Licensee provided a resolution to the NRC concern in Reference 22:

"It is not clear why this statement was made, since the second paragraph of the Reference (27) [8] response, repeated above, evaluates this condition. The effects of containment spray are analogous to 100% humidity, a parameter which was evaluated. The fog-type nozzles used in



the containment spray system, which is described in Section 6.2 of the MP1 FSAR, render the spray parameter analogous to a 100% relative humidity condition.

The use of fog nozzles eliminates the forces associated with the impingement phenomenon. Further, with the exception of cables and penetration splices, necessary electrical equipment within the drywell is protected by boxes and/or protective coverings. Regarding the above-mentioned cables and penetration splices, their location is such that they are neither in line with nor in close proximity to the discharge of the fog nozzles."

This response resolves the concern identified the SER [21].

#### 4.4 EQUIPMENT ENVIRONMENTAL QUALIFICATION EVALUATION

The evaluation presented in this section of the report includes, for each equipment item, completed equipment environmental qualification review checksheets (partially handwritten) which present both the technical information necessary to conduct the review and the results of the evaluation.

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 ! EQUIPMENT ENVIRONMENTAL QUALIFICATION !
   
 ! EQUIPMENT ITEM CHECKSHEET INDEX !
   
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FRC ITEM NO.	COMPONENT	MANUFACTURER	MODEL NUMBER	LOCATION
1	SOLENOID VALVE	TARGET ROCK	1/2545A01	DRYWELL - R1
2	SOLENOID VALVE	ATKOMATIC	15527	DRYWELL - R1
3	SOLENOID VALVE	ATKOMATIC	15527	REACTOR BUILDING - R17
4	SOLENOID VALVE	ATKOMATIC	13110	REACTOR BUILDING - R7, R9
5	SOLENOID VALVE	ASCO	NP8316E36E	REACTOR BUILDING - R2A, B
6	SOLENOID VALVE	ASCO	HVA904052A	REACTOR BUILDING - R2A, B
7	SOLENOID VALVE	ASCO	LBX8320	DRYWELL - R1
8	SOLENOID VALVE	ASCO	LBX8320	STEAM TUNNEL - R4
9	SOLENOID VALVE	ASCO	LBH31615	REACTOR BUILDING - R6, R8
10	SOLENOID VALVE	ASCO	LBH316B15	REACTOR BUILDING - R6, R8
11	SOLENOID VALVE	ASCO	HBH302C27F	REACTOR BUILDING - R6
12	SOLENOID VALVE	ASCO	H302C27HF	REACTOR BUILDING - R14
13	SOLENOID VALVE	ASCO	H302C27HF	REACTOR BUILDING - R10
14	SOLENOID VALVE	ASCO	WPL88300B58R	REACTOR BUILDING - R12
15	SOLENOID VALVE	ASCO	HT8320A189	DRYWELL - R1
16	SOLENOID VALVE	ASCO	HBH302C27F	REACTOR BUILDING - R12
17	SOLENOID VALVE	ASCO	H300B51F	REACTOR BUILDING - R8
18	SOLENOID VALVE	ASCO	LBH31615	REACTOR BUILDING - R10
19	SOLENOID VALVE	ASCO	H31430	REACTOR BUILDING - R10
20	SOLENOID VALVE	ASCO	WPL88300B58RU	TURBINE BUILDING
21	SOLENOID VALVE	ASCO	LBH344B39	TURBINE BUILDING
22	TRANSDUCER, I/P	MASONEILAN	8005	TURBINE BUILDING
23	MOTORIZED VALVE ACTUATOR	VELAN	2548	REACTOR BUILDING
24	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMA	TURBINE BUILDING - T5C
25	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB	DRYWELL - R1
26	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMA00	STEAM TUNNEL - R4
27	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB000	DRYWELL - R1
28	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB000	REACTOR BUILDING - R12
29	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB2	REACTOR BUILDING - R7, R9
30	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB3	TURBINE BUILDING
31	MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB3	DRYWELL - R1
32	MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR BUILDING - R7, R9
33	MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR BUILDING - R7, R9
34	MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	DRYWELL - R1
35	MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR BUILDING
36	MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR BUILDING - R7, R9
37	MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR BUILDING - R2A, R2C
38	MOTORIZED VALVE ACTUATOR	TELEDYNE	T4	REACTOR BUILDING - R6
39	MOTORIZED VALVE ACTUATOR	TELEDYNE	T4	REACTOR BUILDING - R17
40	MOTORIZED VALVE ACTUATOR	TELEDYNE	T4	REACTOR BUILDING - R2A
41	MOTORIZED VALVE ACTUATOR	TELEDYNE	T4	REACTOR BUILDING - R9, R7
42	MOTORIZED VALVE ACTUATOR	TELEDYNE	T40	REACTOR BUILDING - R2A, R2C
43	MOTORIZED VALVE ACTUATOR	TELEDYNE	T40	REACTOR BUILDING - R2A, R2C
44	MOTORIZED VALVE ACTUATOR	TELEDYNE	T40	REACTOR BUILDING - R17, R2A
45	MOTORIZED VALVE ACTUATOR	TELEDYNE	T40	REACTOR BUILDING - R2A, R2C
46	LIMIT SWITCH	NAMCO	SNAPLUCK	STEAM TUNNEL - R4
47	LIMIT SWITCH	NAMCO	KA740	DRYWELL - R1
48	LIMIT SWITCH	MICRO SWITCH	DTF22RN	REACTOR BUILDING - R10
49	LIMIT SWITCH	MICRO SWITCH	DTF22R42	REACTOR BUILDING - R12, R8
50	LIMIT SWITCH	MICRO SWITCH	SINL76922	REACTOR BUILDING - R8

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! EQUIPMENT ENVIRONMENTAL QUALIFICATION !
   
! EQUIPMENT ITEM CHECKSHEET INDEX !
   
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FRC ITEM NO.	COMPONENT	MANUFACTURER	MODEL NUMBER	LOCATION
51	LIMIT SWITCH	MICRO SWITCH	51MLT6022	REACTOR BUILDING - R12
52	LIMIT SWITCH	MICRO SWITCH	RAF12RN2	REACTOR BUILDING - R10
53	LIMIT SWITCH	ALLEN-BRADLEY	802TA*2 SERIES C	TURBINE BUILDING
54	PRESSURE SWITCH	STATIC-O-RING	5NA43	REACTOR BUILDING
55	PRESSURE SWITCH	STATIC-O-RING	12NAA4	REACTOR BUILDING
56	PRESSURE SWITCH	BARKSDALE	82TA12SS	REACTOR BUILDING
57	PRESSURE SWITCH	BARKSDALE	81TA12SSCS	REACTOR BUILDING
58	PRESSURE SWITCH	MERCOID	DA7043804R21E	REACTOR BUILDING
59	PRESSURE SWITCH	BARTON	288	REACTOR BUILDING
60	PRESSURE SWITCH	MELETRON	37265549A292	REACTOR BUILDING
61	PRESSURE SWITCH	MELETRON	372	TURBINE BUILDING
62	PRESSURE SWITCH	MELETRON	92012L	REACTOR BUILDING
63	PRESSURE SWITCH	DUAL SNAP	604	TURBINE BUILDING - T5A
64	PRESSURE SWITCH	CUSTOM COMPONENT	630VH4105	REACTOR BUILDING - TOP OF TORUS
65	PRESSURE SWITCH	SQUARE D	AG*24 CLASS 9012	TURBINE BUILDING
66	PRESSURE TRANSMITTER	GENERAL ELECTRIC	551032GAAW1	REACTOR BUILDING
67	LEVEL SWITCH	YARWAY	4418CE	REACTOR BUILDING
68	LEVEL SWITCH	YARWAY	4418C	REACTOR BUILDING
69	LEVEL SWITCH	MAGNETROL	730	CONDENSER BAY
70	LEVEL TRANSMITTER	GOULD	PD30184003811105540	REACTOR BUILDING - TORUS 10
71	FLOW SWITCH	PEECO	HFF	REACTOR BUILDING
72	ACCELEROMETER	ENDEVCO	2273AM20	DRYWELL - R1
73	AMPLIFIER	ENDEVCO	22CATR	DRYWELL - R1
74	RELAY	CHROMALOX	D293625	REACTOR BUILDING
75	TEMPERATURE ELEMENT	CONAX	RTD	REACTOR BUILDING
76	TEMPERATURE SWITCH	FENWAL	1700240	STEAM TUNNEL
77	RADIATION DETECTOR	GENERAL ATOMIC	RD2J	DRYWELL - R1
78	RADIATION MONITOR	GENERAL ELECTRIC	194X927	REACTOR BUILDING
79	ELECTRICAL PENETRATION	GENERAL ELECTRIC	NS	DRYWELL - R1
80	TERMINAL BLOCK	GENERAL ELECTRIC	EB25	DRYWELL AND REACTOR BUILDING
81	TERMINAL BLOCK	GENERAL ELECTRIC	CR151	REACTOR BUILDING
82	ELECTRICAL CONNECTOR	CONAX	M1100132	DRYWELL - R1
83	ELECTRICAL CONNECTOR	IDEAL	SET SCREW TYPE MARK	DRYWELL - R1
84	ELECTRICAL CONNECTOR	BURNDY	PAD AND TAPE TYPE	TURBINE BUILDING T-5C
85	ELECTRICAL CONNECTOR	BURNDY	PAD AND TAPE TYPE	REACTOR BUILDING
86	ELECTRICAL CONNECTOR	BURNDY	RING TONGUE BUTT SPLICES TAPE	REACTOR BUILDING
87	ELECTRICAL CONNECTOR	BURNDY	RING TONGUE BUTT SPLICES TAPED	STEAM TUNNEL
88	ELECTRICAL CONNECTOR	BURNDY	RING TONGUE TAPE	DRYWELL - R1
89	ELECTRICAL CABLE SPLICE	RAYCHEM	WCSFN	DRYWELL - R1
90	ELECTRICAL CABLE	ENDEVCO	3075H6	DRYWELL - R1
91	ELECTRICAL CABLE, INSTRUMENT	ROCKBESTOS	R556104	DRYWELL - R1
92	ELECTRICAL CABLE	KERITE	FR/FR	DRYWELL - R1
93	ELECTRICAL CABLE	KERITE	HTK/FR	DRYWELL - R1
94	ELECTRICAL CABLE	GENERAL ELECTRIC	S158073	DRYWELL - R1
95	ELECTRICAL CABLE	GENERAL ELECTRIC	S158073	STEAM TUNNEL
96	ELECTRICAL CABLE	GENERAL ELECTRIC	S158073	REACTOR BUILDING
97	ELECTRICAL CABLE	GENERAL ELECTRIC	S158073	TURBINE BUILDING
98	ELECTRICAL CABLE	GENERAL ELECTRIC	S1580*1	STEAM TUNNEL - R4
99	ELECTRICAL CABLE	GENERAL ELECTRIC	S1580*1	REACTOR BUILDING
100	ELECTRICAL CABLE	GENERAL ELECTRIC	S1580*1	TURBINE BUILDING

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! EQUIPMENT ENVIRONMENTAL QUALIFICATION !  
! EQUIPMENT ITEM CHECKSHEET INDEX !  
\*\*\*\*\*

FRC ITEM NO.	COMPONENT	MANUFACTURER	MODEL NUMBER	LOCATION
101	ELECTRICAL CABLE	GENERAL ELECTRIC	S158110	DRYWELL - #1
102	ELECTRICAL CABLE	GENERAL ELECTRIC	S158145 30 MIL VOL 45 MIL NEOP	REACTOR BUILDING
103	ELECTRICAL CABLE	GENERAL ELECTRIC	S158145 30 MIL VOL 45 MIL NEOP	TURBINE BUILDING
104	THERMOCOUPLE CABLE	GENERAL ELECTRIC	CU/CONSTANTAN	REACTOR BUILDING - #10
105	ELECTRIC MOTOR	GENERAL ELECTRIC	5K1844L217	TURBINE BUILDING
106	ELECTRIC MOTOR	GENERAL ELECTRIC	5K633171A2	TURBINE BUILDING
107	ELECTRIC MOTOR	GENERAL ELECTRIC	5K6339XC44A	TURBINE BUILDING
108	ELECTRIC MOTOR	GENERAL ELECTRIC	5K661186A1	TURBINE BUILDING
109	ELECTRIC MOTOR	GENERAL ELECTRIC	5K6326XC317A	INTAKE STRUCTURE
110	ELECTRIC MOTOR	GENERAL ELECTRIC	5K6339XC39A	INTAKE STRUCTURE
111	ELECTRIC MOTOR	GENERAL ELECTRIC	5K618941A134	REACTOR BUILDING
112	ELECTRIC MOTOR	GENERAL ELECTRIC	5K6329XC3A	REACTOR BUILDING
113	ELECTRIC MOTOR	GENERAL ELECTRIC	5K6338XC28A	REACTOR BUILDING
114	ELECTRIC MOTOR	GENERAL ELECTRIC	5K447XAM206	REACTOR BUILDING
115	MOTOR CONTROL CENTER	GENERAL ELECTRIC	HP171366	TURBINE BUILDING
116	MOTOR CONTROL CENTER	GENERAL ELECTRIC	HP171366	REACTOR BUILDING
117	MOTOR CONTROL CENTER	GENERAL ELECTRIC	7700	TURBINE BUILDING
118	MOTOR CONTROL CENTER	GENERAL ELECTRIC	7700	DIESEL GENERATOR ROOM
119	MOTOR CONTROL CENTER	GENERAL ELECTRIC	7700	GTG BUILDING
120	MOTOR CONTROL CENTER	GENERAL ELECTRIC	7700	REACTOR BUILDING
121	TRANSFORMER	GENERAL ELECTRIC	1500/2000 KVA (4160-480V)	TURBINE BUILDING
122	TRANSFORMER	ITE	1500/2000 KVA	TURBINE BUILDING
123	BATTERY CHARGER	FANSTEEL	4039 FORM A	TURBINE BUILDING
124	MOTOR-GENERATOR SET	GENERAL ELECTRIC	DC 5C0405E603/AC 5K365AK2005V/	TURBINE BUILDING
125	DIESEL GENERATOR	FAIRBANKS MORSE	38TD8 1/8 TURBOCHARGED	DIESEL GENERATOR ROOM
126	ELECTRIC HEATER	ND	ND	TURBINE BUILDING
127	ELECTRIC HEATER CONTROLS	JOHNSON SERVICE	T900 THERMOSTAT	TURBINE BUILDING
128	SWITCHGEAR	GENERAL ELECTRIC	NP60844R	TURBINE BUILDING
129	SWITCHGEAR	GENERAL ELECTRIC	AKDS	TURBINE BUILDING



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

Equipment Item No. 1  
 Solenoid Valve Located in the Drywell  
 Target Rock Model 1/2-SMS-A-01  
 Actuates Relief Valve (1-MS-3A, B, C, D, E, F)  
 Licensee References 807 and 3627  
 Required Operating Time: 90 minutes  
 TER Checksheet No. 1  
 Reference 19, Section 4.6.2.0  
 Licensee Submittal: Page I-1 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TFD for Legend)

(R), T, QT, RT, P, H, (CS), (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and ~~will~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| I.a Qualified                      | <u>II.c Qualified Life Deficiency</u> |
| I.b Modification                   | III.a Exempt                          |
| II.a Qualification Not Established | III.b Not in Scope                    |
| II.b Not Qualified                 | IV Documentation Not Available        |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) X
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified X
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity. Refer to Section B.5 of this report.



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FRC Project No. C5257

FRC Assignment No. 13

FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. L

Checksheets 5a thru 5g have been removed due to the proprietary nature of information contained therein.



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. L

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Target Rock specifies for their 1/2-SMS-A-01 solenoid valve assemblies that the solenoid internals and associated silicone rubber O-rings be replaced every 6 years and that every 18 months the solenoid valve assembly be cycle tested for proper mechanical and electrical operation. [3627]



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2**

Equipment Item No. 2  
 Solenoid Valve Located in the Drywell  
 Atkomatic Model 15-527  
 Actuates Reactor Loop Sample Valve (1-SM-1)  
 Licensee References 13 and 3623  
 Required Operating Time: 5.5 seconds  
 TER Checksheet No. 2  
 Reference 19, Section 4.5.2.3  
 Licensee Submittal: Page I-6 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	5a, <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , 5f, 5g, <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a</u> Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                        | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>  X  </u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>      </u>
Aging Degradation Evaluated Adequately	<u>      </u>
Qualified Life or Replacement Schedule Established (If Required)	<u>      </u>
Program Established to Identify Aging Degradation	<u>      </u>
Criteria Regarding Aging Simulation Satisfied (If Required)	<u>      </u>
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u>      </u>
o Peak Pressure Adequate	<u>      </u>
o Duration Adequate	<u>      </u>
o Required Profile Enveloped Adequately	<u>      </u>
o Steam Exposure (If Required) Adequate	<u>      </u>
Criteria Regarding Spray Satisfied	<u>      </u>
Criteria Regarding Submergence Satisfied	<u>      </u>
Criteria Regarding Radiation Satisfied	<u>  X  </u>
Criteria Regarding Test Sequence Satisfied	<u>      </u>
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	<u>      </u>
Criteria Regarding Functional Testing Satisfied	<u>      </u>
Criteria Regarding Instrument Accuracy Satisfied	<u>      </u>
Test Duration Margin (1 hour + Function Time) Satisfied	<u>      </u>
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	<u>      </u>

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	<u>      </u>
I.b	Equipment Qualification Pending Modification	<u>      </u>
II.a	Equipment Qualification Not Established	<u>  X  </u>
II.b	Equipment Not Qualified	<u>      </u>
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u>      </u>
III.a	Equipment Exempt From Qualification	<u>      </u>
III.b	Equipment Evaluation Deferred	<u>      </u>
IV	Documentation Not Made Available	<u>      </u>

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity. Refer to Section B.5 of this report.

Containment Profiles and/or Time Requirements

Exception is taken to the SER suggested environmental requirements of pressure, temperature, and/or operating time. The equipment is qualified to the pressure and temperatures conditions discussed in Section B.1, and/or is not required to remain operable for the period of time identified in the SER/TER. The equipment is qualified for the time interval for which it is required.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

Checksheets 5a, 5f and 5g have been removed due to the  
proprietary nature of information contained therein.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 3

Equipment Item No. 3  
 Solenoid Valve Located in the Reactor Building  
 Atkomatic Model 15-527  
 Actuates Reactor Loop Sample Valve (1-SM-2)  
 Licensee Reference 3623  
 Required Operating Time: 5.5 seconds  
 TER Checksheet No. 3  
 Reference 19, Section 4.5.2.3  
 Licensee Submittal: Page 1-7 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 3

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a</u> Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                        | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 3

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity.

Refer to Section B.5 of this report.

Containment Profiles and/or Time Requirements

Exception is taken to the SER suggested environmental requirements of pressure, temperature, and/or operating time. The equipment is qualified to the pressure and temperatures conditions discussed in Section B.1, and/or is not required to remain operable for the period of time identified in the SER/TER. The equipment is qualified for the time interval for which it is required.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 3

Checksheets 5a, 5f and 5g have been removed due to the proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

Equipment Item No. 4  
 Solenoid Valve Located in the Reactor Building  
 Atkomatic 13110  
 LPCI and Core Spray Pump Motor Cooling Water Valves (V10-5A, B and V10-4A, B)  
 Licensee Reference 3631  
 Required Operating Time: Less than 30 seconds  
 TER Checksheet No. 4  
 Reference 19, Section 4.6.25  
 Licensee Submittal: Page I-22 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
  - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
  - Corrective action specified by the Licensee:
    - Equipment replacement with qualified equipment
    - Equipment modification
    - Equipment relocation above submergence level
    - Relocate or shield equipment from radiation source
    - Verify qualification by additional (testing/analysis)
    - Equipment relocation to a mild environment
    - Qualification testing of equipment in progress
    - Awaiting qualification documentation from the vendor
    - Other ( \_\_\_\_\_ )
  - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Deferred                 |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margin. Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Evaluation Deferred \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

Checksheets 54 have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

Equipment Item No. 5  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model NP8316E36E  
 Backup Scram Initiation Valves (302-19C, D)  
 Licensee Reference 649  
 Required Operating Time: 1 second  
 TER Checksheet No. 5  
 Reference 19, Section 4.3.1.1  
 Licensee Submittal: Page I-38 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| I.a Qualified                      | <u>II.c</u> Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                          |
| II.a Qualification Not Established | III.b Not in Scope                    |
| II.b Not Qualified                 | IV Documentation Not Available        |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u> _____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u>X</u> _____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

LICENSEE RESPONSE TO NRC SER

5. Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

7. Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

Equipment Item No. 6  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model HVA90405-2A  
 Backup Scram Initiation Valves (302-19A, B; -20A, B)  
 Licensee Reference 3635  
 Required Operating Time: 1 second  
 TER Checksheet No. 6  
 Reference 19, Section 4.5.2.12  
 Licensee Submittal: Page I-25 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other (REPLACEMENT, MAINTENANCE / SURVEILLANCE)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u> _____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u> _____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*This item has been placed in category I.b because the license has indicated that degradable parts will be replaced. After initial replacement of parts the item should be listed as category I.a.*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.  
Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.  
In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

Checksheets 5f and 5g have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

*reference 3628 provided the following recommendations:*

- // Recommendations for valve Model HVA90405-2A are as follow:
- A. Wyle recommends exercising one of the following two (2) options:
    - i. Based on the expected life values listed in Table I, replace the Buna-N components every 2.5 years, or
    - ii. With General Electric Corporation's concurrence, replace the Buna-N with Ethylene Propylene components (Reference 18).
  - B. Replace the Class B molded coil every four (4) years.
  - C. Perform preventative maintenance each month as specified by Reference (5) to monitor performance of all nonmetallic materials. \



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z

Equipment Item No. 7  
 Solenoid Valve Located in the Drywell  
 ASCO Model LBX8320  
 Actuates Main Steam Isolation Valves (IMS-1A, B, C, D)  
 Licensee References 839 and 3628  
 Required Operating Time: 5.5 seconds  
 TER Checksheet No. 7  
 Reference 19, Section 4.5.2.1  
 Licensee Submittal: Pages I-2 and I-3 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, QI, RT, P, H, (CS), (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.d Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____X_____
Qualified Life or Replacement Schedule Established (If Required)	_____X_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____X_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____X_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity. Refer to Section B.5 of this report.

Containment Profiles and/or Time Requirements

Exception is taken to the SER suggested environmental requirements of pressure, temperature, and/or operating time. The equipment is qualified to the pressure and temperatures conditions discussed in Section B.1, and/or is not required to remain operable for the period of time identified in the SER/TER. The equipment is qualified for the time interval for which it is required.





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3b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

LICENSEE RESPONSE TO NRC SER (Continued)

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z

Checksheets 5a thru 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

Equipment Item No. 8  
 Solenoid Valve Located in the Steam Tunnel  
 ASCO Model LB10320  
 Actuates Main Steam Isolation Valves (1MS-2A, B, C, D)  
 Licensee References 839 and 3628  
 Required Operating Time: 5.5 seconds  
 TER Checksheet No. 8  
 Reference 19, Section 4.5.2.2  
 Licensee Submittal: Pages I-4 and I-5 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| <input checked="" type="radio"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                               | III.a Exempt                   |
| II.a Qualification Not Established             | III.b Not in Scope             |
| II.b Not Qualified                             | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

*Qualified Life stated to be 11.17 years.  
 The unit is qualified for this application.*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Containment Profiles and/or Time Requirements

Exception is taken to the SER suggested environmental requirements of pressure, temperature, and/or operating time. The equipment is qualified to the pressure and temperatures conditions discussed in Section B.1, and/or is not required to remain operable for the period of time identified in the SER/TER. The equipment is qualified for the time interval for which it is required.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

Checksheets 5a thru 5e have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

Equipment Item No. 9  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model LB 831615  
 Actuates Containment Isolation Valves (1-AC-6, -7, -8, -10, -11)  
 Licensee References 3637 and 3638  
 Required Operating Time: 11 seconds  
 TER Checksheet No. 9  
 Reference 19, Section 4.5.2.21  
 Licensee Submittal: Pages I-9 and I-17 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , 5f
	<del>6a</del> , <del>6b</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>7a</del> , <del>7b</del>
Maintenance and Replacement Schedule Summary	7a, 7b, 7c





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other (Replace parts see p-7a)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventive Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

This equipment is not required to operate during a HELB outside containment. For a LOCA, the only deficiency in the qualification documentation concerns radiation and aging considerations. The deleterious effects resulting from these parameters are time dependent phenomena which could not reasonably be expected to result in equipment failure in the short term.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

Checksheets 5A have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations

Recommendations for valve Model LB831615 are as follow:

- A. Replace the seals, discs, and diaphragm assembly (Buna-N material) every 2.5 years (See Table I), or replace the Buna-N components with Ethylene Propylene components and thereafter, every four (4) years.
- B. Replace the Class B molded coil every four (4) years (See Section 5.3).
- C. Perform preventive maintenance each month as specified by Reference (6) to monitor potential age-related degradations of all nonmetallic materials.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

Equipment Item No. 10  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model LB8316B15  
 Actuates Containment Isolation Valves (1-AC-4, 5)  
 Licensee Reference 3637  
 Required Operating Time: 11 seconds  
 TER Checksheet No. 10  
 Reference 19, Section 4.5.2.2.1  
 Licensee Submittal: Page I-9 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replace Parts - seep-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

Checksheets 5f \_\_\_\_\_ have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model LB831615 are as follow:

- A. Replace the seals, diaphragm assembly, and discs (Buna-N material) every four (4) years (See Table I).
- B. Replace the Class B molded coil every four (4) years (See Section 5.3).
- C. Perform preventive maintenance each month specified by Reference (6) to monitor for potential age-related degradations of all nonmetallic materials.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

Equipment Item No. 11  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model HB 8302C27F  
 Actuates Containment Isolation Valve (1-AC-12)  
 Licensee Reference 3633  
 Required Operating Time: 16.5 seconds  
 PER Checksheet No. 11  
 Reference 19, Section 4.5.2.21  
 Licensee Submittal: Page I-10 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
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Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has~~/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has~~/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has~~/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of parts see p-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified           | II.c Qualified Life Deficiency |
| <input type="checkbox"/> I.b Modification                   | III.a Exempt                   |
| <input type="checkbox"/> II.a Qualification Not Established | III.b Not in Scope             |
| <input type="checkbox"/> II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model HB8302C27F are as follow:

- a. Replace the gaskets (Buna-N material) in accordance with the schedule outlined in Section 5.3.
- b. Replace the Class H coil every four (4) years (Reference 4).
- c. Perform preventative maintenance every month as specified in Reference (14) to monitor performance of all nonmetallic materials.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

Equipment Item No. 12  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model 8302C27RF  
 Actuates Iso-Condenser Steam Vent Valves (1-IC-6, -7)  
 Licensee Reference 3640  
 Required Operating Time: 5.5 seconds  
 TER Checksheet No. 12  
 Reference 19, Section 4.5.2.20  
 Licensee Submittal: Page I-8 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other (Replacement of Parts see p-7a)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982. In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW/ OF EQUIPMENT ITEM NO. 12

Checksheets 5f and 5g have been removed due to the proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model 8302C27RF are as follow:

- A. Replace the seat and gaskets (Buna-N material) every three (3) years (See Table I), or
- B. Replace the Buna-N components with Ethylene Propylene material; thereafter, replace the Ethylene Propylene components every four (4) years.
- C. Replace the Class F coil every four (4) years (Reference 19).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

Equipment Item No. 13  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model 8302C27RF  
 Actuates Drywell Drain Valves (1-SS-3, -4, -13, -14)  
 Licensee Reference 3626  
 Required Operating Time: 22 seconds  
 TER Checksheet No. 13  
 Reference 19, Section 4.5.2.21  
 Licensee Submittal: Page I-11 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of parts see p-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982 .)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. L3

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

//

Recommendations for valve Model 8302C27RF are as follow:

- a. Replace the seat and gaskets (Buna-N material) every four (4) years (See Table I).
- b. Replace the Class A coil with a Class HT coil (Reference 1, Part 9) and every four (4) years thereafter (Reference 7).
- c. Perform preventative maintenance each month as specified by Reference (6) to monitor performance of all nonmetallic materials. "

[3626]



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

Equipment Item No. 14  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model WPLB8300D58R  
 Actuates SBT System Inlet Damper (1-SG-1A, B)  
 Licensee Reference 3639  
 Required Operating Time: Continuous  
 TER Checksheet No. 14  
 Reference 19, Section 4.5.2.22  
 Licensee Submittal: Page I-15 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of Parts, see p-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model WPLB8300B58RU are as follow:

- A. Replace the seat and gaskets (Buna-N material) every 2.5 years (See Table I), or
- B. Replace the Buna-N components with Ethylene Propylene components at this time and every four (4) years thereafter.
- C. Replace the Class B molded coil every four (4) years (See Section 5.3).
- D. Perform preventive maintenance every month as specified by Reference (8) to monitor for potential age-related degradations of all non-metallic materials.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

Equipment Item No. 15  
 Solenoid Valve Located in the Drywell  
 ASCO Model HT8320A189  
 Actuates Bypass Valve (1-CU-2A)  
 Licensee Reference 3625  
 Required Operating Time: 19.2 seconds  
 TER Checksheet 15  
 Reference 19, Section 4.5.2.23  
 Licensee Submittal: Page I-16 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Awaiting qualification documentation from the vendor
  - Other (Replacement of Parts)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <b>II.a</b> Qualification Not Established | III.b Deferred                 |
| II.b Not Qualified                        | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Evaluation Deferred	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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NRC Contract No. NRC-03-79-118

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FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

Checksheets 5a, 5f and 5g have been removed due to the proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 16

Equipment Item No. 16  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model HB8302C27F  
 Actuates Containment Isolation Valve in the Containment Atmosphere Control System (1-AC-9)  
 Licensee Reference 3633  
 Required Operating Time: 16.5 seconds  
 TER Checksheet No. 16  
 Reference 19, Section 4.5.2.11  
 Licensee Submittal: Page I-18 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 16

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of Parts, see p-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 16**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 16

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LG

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 16

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model HB8302027F are as follow:

- a. Replace the gaskets (Buna-N material) in accordance with the schedule outlined in Section 5.3.
- b. Replace the Class H coil every four (4) years (Reference 4).
- c. Perform preventative maintenance every month as specified in Reference (14) to monitor performance of all nonmetallic materials. <sup>W</sup>

[3633]



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

Equipment Item No. 17  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model 8300B61R  
 Actuates Containment Isolation Valve in the Containment Atmosphere Control System (1-AC-17)  
 Licensee Reference 3626  
 Required Operating Time: 11 seconds  
 TER Checksheet No. 17  
 Reference 19, Section 4.5.2.11  
 Licensee Submittal: Page I-20 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None.

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of Parts, see p 7.a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1980.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model 8300B61R are as follow:

- a. Replace the seat and gaskets (Buna-N material) every four (4) years (See Table II).
- b. Replace the Class A coil with a Class HT coil (Reference 1, Part 9) and every four (4) years thereafter (Reference 7).
- c. Perform preventative maintenance every month as specified by Reference (6) to monitor performance of all nonmetallic materials.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 18

Equipment Item No. 18  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model LB831615  
 Actuates Containment Isolation Valves in Atmosphere Control System (1601-8A)  
 Licensee Reference 3634  
 Required Operating Time: 11 seconds  
 TER Checksheet No. 18  
 Reference 19, Section 4.5.2.19  
 Licensee Submittal: Page I-19 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 18

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of Parts, See p-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. ( Schedule for accomplishing the corrective action September 1982 )
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER or Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 18

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 18

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 18

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 18

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model LB831615 are as follow:

- A. Replace the seals, discs, and diaphragm assembly (Buna-N material) every four (4) years (See Table I).
- B. Replace the Class B molded coil every four (4) years (See Section 5.3).
- C. Perform preventative maintenance each month as specified by Reference (6) to monitor performance of all nonmetallic materials.



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**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19**

Equipment Item No. 19  
 Solenoid Valve Located in the Reactor Building  
 ASCO Model 831430  
 Actuates Containment Isolation Valves in Atmospheric Control System (1601-8B)  
 Licensee Reference 3636  
 Required Operating Time: 11 seconds  
 TER Checksheet No. 19  
 Reference 19, Section 4.5.2.19  
 Licensee Submittal: Page I-19 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, Q1 RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( Replacement of parts, see p-7a )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1988.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure: \_\_\_\_\_
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

Recommendations for valve Model 831430 are as follow:

- A. Replace the seals and disc (Buna-N material) every four (4) years.
- B. Replace the Class A coil with a Class HT ~~coil now~~ (Reference 2), ~~and~~ every four (4) years, thereafter (Reference 8).
- C. Perform preventive maintenance every month as specified by Reference (6) to monitor potential age-related degradations of all nonmetallic materials.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

Equipment Item No. 20  
 Solenoid Valve Located in the Turbine Building  
 ASCO Model WPLB8300B58RU  
 Actuates Standby Gas Treatment System Outlet Dampers (1-SG-2A, B, -4A, B)  
 Licensee reference not cited  
 Required Operating Time: 1 hour  
 TER Checksheet No. 20  
 Reference 19, Section 4.3.2.22  
 Licensee Submittal: Page I-14 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
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Licensee Response to NRC SER	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/nas not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 21

Equipment Item No. 21  
 Solenoid Valve Located in the Turbine Building  
 ASCO Model LB8344B39  
 Actuate Containment Isolation Valve (1-HV-1, -2, -3, -4)  
 Licensee reference not cited  
 Required Operating Time: 1 hour  
 TER Checksheet No. 21  
 Reference 19, Section 4.3.2.22  
 Licensee Submittal: Page I-13 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 21**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 21

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	<u>X</u>
IV	Documentation Not Made Available	_____

MILD ENVIRONMENT



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22**

Equipment Item No. 22  
 I/P Converter Located in the Turbine Building  
 Masoneilan Model 8005  
 Controls Feedwater Coolant Injection Valves (FCV-642A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 22  
 Reference 19, Section 4.6.3  
 Licensee Submittal: Page II-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:     
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

LICENSEE RESPONSE TO NRC SER

"The TER reference to the DITER is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal.

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22**

Reason for Concurrence

Reason for Non-Concurrence

\_\_\_ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

\_\_\_ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

\_\_\_ Backup (equipment/system) is not safety-related.

Other (see page 4b)

\_\_\_ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

Resultant NRC Qualification Evaluation Category (IIIa/IIIb)

\_\_\_ The rationale presented by the Licensee is not supported by objective technical evidence.

\_\_\_ Note 1: The Licensee (has/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page \_\_\_)

\_\_\_ Other (see page \_\_\_)

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HEBB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23**

Equipment Item No. 23  
 Motorized Valve Actuator Located in the Reactor Building  
 Velan Model 254B  
 Actuates Service and Instrument Air Valves (1-SA-35, 1-IA-68)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 23  
 Reference 19, Section 4.6.5  
 Licensee Submittal: Page II-22 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a</u> Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                        | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it does not perform any essential safety function in the harsh environment postulated and failure of it will not adversely impact safety functions or mislead plant operators. As such, evidence of environmental qualification is not required."





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

— Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

Reason for Concurrence

The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page     )

Resultant NRC Qualification Evaluation Category (IIIa/IIIb)

Note 1: The Licensee (has/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page     )

Reason for Non-Concurrence

Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

Backup (equipment/system) is not safety-related.

This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

The rationale presented by the Licensee is not supported by objective technical evidence.

Other (see page 4c)

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

Licensee Statement from TER-C5257-204

"The following electrical equipment (by system), classified as Category 1 or required for safe shutdown, has been reviewed in accordance with the DOR Guidelines for environmental qualification and are not required to be addressed. This equipment is not required to mitigate the accident to which it's exposed or is replaced by redundant mitigation systems or equipment in areas not subjected to a harsh environment for the same accident. This memo, <sup>GEE-80-660.</sup> *updates*

"Instrument & Service Air Systems

"These systems contain supplemental air supply in addition to their normal storage capacity sufficient for mitigating an accident. In addition sufficient time is available for repair or temporary supplies to supplement the storage capacity."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

FRC Evaluation from TER-C5257-204

"The instrument air system provides all essential air service throughout the plant. The service air system backs up the instrument air system by the cross-connection with a pressure regulator set to keep instrument air above 93 psig. Sufficient air receiver capacity is provided to permit plant shutdown with both compressors inoperative. If both compressors are inoperative and the instrument air system is isolated from the service air system, the receivers provide the required quantity of air above 70 psig to all essential services (except for MSIVs and main steam power operated reliefs, which have their own accumulators) for at least 4 minutes after a shutdown is initiated."

FRC Conclusion from TER-C5257-204

"FRC concurs with the Licensee that there is considerable flexibility and capacity in these systems. FRC does not concur, however, that these air systems are never relied upon to mitigate consequences of an accident because of the storage capacity provided. The Licensee's statement that sufficient time is available for repair or temporary resupply of the storage capacity indicates that the Licensee also feels that the storage capacity may be insufficient. These systems should be fully environmentally qualified to perform their safety function in any post-accident environment to which they may be subjected."

The Licensee's statement on page 3a of this check sheet does not respond to the FRC concern discussed in TER-C5257-204. The Licensee's statement merely reiterates the Licensee's position that this equipment is exempt from qualification because it does not perform any essential safety function.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

NOTES:

1. The Licensee has reiterated the contention that this equipment need not be environmentally qualified.
2. The Licensee had previously committed to replace this equipment item with qualified units prior to June 30, 1982, as stated in TER-C5257-204[19].
3. The system consideration review (pages 4a,b,c) does not concur with the Licensee's claim that this equipment does not need to be environmentally qualified. This position was previously stated in TER-C5257-204[19] section 4.6.5.
4. The Licensee has not cited any qualification documentation for this equipment item.
5. This equipment item is assigned to NRC Qualification Category II.a, because no qualification documentation has been provided and it has been determined that this equipment item is required to be functional and, therefore environmentally qualified.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

Equipment Item No. 24  
 Motorized Valve Actuator Located in the Turbine Building  
 Limitorque Model SMA with Reliance Model 447014-KT, Class B Insulation Motor  
 Actuates Service Water Isolation Valve (I-SW-9)  
 Licensee Reference 3629  
 Required Operating Time: Less than 30 seconds  
 TER Checksheet No. 24  
 Reference 19, Section 4.3.3.3  
 Licensee Submittal: Page II-11 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, 5g, 5h, 5i, <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	7a, <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress.
  - Other ( Replace seals and gaskets/ include in maintenance/surveillance program. )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| I.a Qualified                      | <u>II.c Qualified Life Deficiency</u> |
| I.b Modification                   | III.a Exempt                          |
| II.a Qualification Not Established | III.b Not in Scope                    |
| II.b Not Qualified                 | IV Documentation Not Available        |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	<u>X</u> _____
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u> _____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u>X</u> _____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

LICENSEE RESPONSE TO NRC SER

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

Checksheets 5f thru 5i have been removed due to the proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

The following information regarding the maintenance and replacement schedule(s) for components, sub-components, and materials has been provided by the Licensee.

// The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report. [22]

Reference 3629 stated,

"It is recommended that the Buna-N components be changed on approximately a yearly basis, or replace with an acceptable temperature resistant material such as Viton."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

Equipment Item No. 25  
 Motorized Valve Actuator Located in the Drywell  
 Limitorque Model SMB  
 Actuates Recirculation Pump Discharge Isolation Valves (1-RR-2A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 25  
 Reference 19, Section 4.5.2.6  
 Licensee Submittal: Page II-8 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has~~/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has~~/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a</u> Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                        | IV Documentation Not Available |



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

LICENSEE RESPONSE TO NRC SER

None provided (It is possible that the Licensee EEQ SER/TER REVIEW pages were inadvertently left out of the submittal)



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

Checksheets 54 have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

Equipment Item No. 26  
 Motorized Valve Actuator Located in the Steam Tunnel  
 Limatorque Model SMB-00 with Peerless dc Motors; Class RH Insulation  
 Actuates Containment Isolation Valve (1-MS-6)  
 Licensee Reference 3630  
 Required Operating Time: 38.4 seconds  
 TER Checksheet No. 26  
 Reference 19, Section 4.5.2.6  
 Licensee Submittal: Page II-16 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other ( \_\_\_\_\_ )

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| I.a Qualified                      | <u>II.c Qualified Life Deficiency</u> |
| I.b Modification                   | III.a Exempt                          |
| II.a Qualification Not Established | III.b Not in Scope                    |
| II.b Not Qualified                 | IV Documentation Not Available        |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen. Established	_____
Aging Degradation Evaluated Adequately	<u>X</u>
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u>
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	_____
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u>X</u>
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

Checksheets 5a thru 5g have been removed due to the  
proprietary nature of information contained therein.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

Equipment Item No. 27  
 Motorized Valve Actuator Located in the Drywell  
 Limatorque Model SMB-000  
 Actuates Containment Isolation Valves (1-MS-5)  
 Licensee reference not cited  
 Required Operating Time: 38.4 seconds  
 TER Checksheet No. 27  
 Reference 19, Section 4.5.2.6  
 Licensee Submittal: Page II-14 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |   |
|---|---|
| <input type="checkbox"/> I.a Qualified                      | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification        | <input type="checkbox"/> III.a Exempt                   |
| <input type="checkbox"/> II.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope             |
| <input type="checkbox"/> II.b Not Qualified                 | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:     
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 28

Equipment Item No. 28  
 Motorized Valve Actuator Located in the Reactor Building  
 Limatorque Model SMB-000  
 Actuates Head Spray Valve (1-HS-4)  
 Licensee Reference 9  
 Required Operating Time: Continuous  
 TER Checksheet No. 28  
 Reference 19, Section 4.3.1.3  
 Licensee Submittal: Page II-21 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 28

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| I.a Qualified                      | <u>II.c</u> Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                          |
| II.a Qualification Not Established | III.b Not in Scope                    |
| II.b Not Qualified                 | IV Documentation Not Available        |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 28**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) X \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified X \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 28

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29**

Equipment Item No. 29  
 Motorized Valve Actuator Located in the Reactor Building  
 Limitorque Model SMB-2  
 Actuates SW Discharge Valves from RHR Heat Exchanger (1-LPC-4A, B)  
 Licensee Reference 9  
 Required Operating Time: Continuous  
 TER Checksheet No. 29  
 Reference 19, Section 4.3.1.3  
 Licensee Submittal: Page II-24 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, Q1, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| I.a Qualified                      | <u>II.c Qualified Life Deficiency</u> |
| I.b Modification                   | III.a Exempt                          |
| II.a Qualification Not Established | III.b Not in Scope                    |
| II.b Not Qualified                 | IV Documentation Not Available        |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u> _____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u>X</u> _____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29

Checksheets 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

Equipment Item No. 30  
 Motorized Valve Actuator Located in the Turbine Building  
 Limitorque Model SMB-3  
 Actuates Feedwater Regulating Valves (1-FW-4A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 30  
 Reference 19, Section 4.3.3.4  
 Licensee Submittal: Page II-1 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

LICENSEE RESPONSE TO NRC SER

"The TER reference to the DITER is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal."

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

\_\_\_ Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

\_\_\_ Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

\_\_\_ Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

\_\_\_ Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

\_\_\_ Backup (equipment/system) is subject to a potentially disabling single active failure.

\_\_\_ Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

\_\_\_ Failure of the primary equipment can result in erroneous indication which could mislead an operator.

\_\_\_ Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

Reason for Concurrence

- The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)
- Other (see page 4B)
- Resultant NRC Qualification Evaluation Category (IIIa, IIIb)
- Note 1: The Licensee (~~has~~ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page       )

Reason for Non-Concurrence

- Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.
- Backup (equipment/system) is not safety-related.
- This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.
- The rationale presented by the Licensee is not supported by objective technical evidence.
- Other (see page       )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 31

Equipment Item No. 31  
 Motorized Valve Actuator Located in the Drywell  
 Limatorque Model SB-3  
 Actuates Isolation Condenser Valve (1-IC-1)  
 Licensee Reference 3618  
 Required Operating Time: 26 seconds  
 TER Checksheet No. 31  
 Reference 19, Section 4.5.2.5  
 Licensee Submittal: Page II-10 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, <del>5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 31

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other ( \_\_\_\_\_ )

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| I.a Qualified                            | II.c Qualified Life Deficiency |
| I.b Modification                         | III.a Exempt                   |
| <u>II.a Qualifies on Not Established</u> | III.b Not in Scope             |
| II.b Not Qualified                       | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 31

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____X
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 31

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventive Maintenance Program.

The valve internals were replaced with qualified parts during the last refueling outage.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 31

Checksheets 5a thru 5g have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

Equipment Item No. 32  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-10  
 Actuates Core Spray Injection Valves (1-C: -4A, B)  
 Licensee reference not cited  
 Required Operating Time: 30 seconds  
 TER Checksheet No. 32  
 Reference 19, Section 4.5.2.4  
 Licensee Submittal: Page II-9 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| I.a Qualified  | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                   | III.b Not in Scope             |
| II.b Not Qualified                                   | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 33**

Equipment Item No. 33  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-10  
 Actuates RHR Heat Exchanger Bypass Valves (1-LP-7A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 33  
 Reference 19, Section 4.5.2.16  
 Licensee Submittal: Page II-33 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 33

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 33

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 33

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 34

Equipment Item No. 34  
 Motorized Valve Actuator Located in the Drywell  
 Teledyne Model T-10  
 Actuates Containment Isolation Valves (1-IC-4, 1-CU-2)  
 Licensee reference not cited  
 Required Operating Time: 21 seconds  
 TER Checksheet No. 34  
 Reference 19, Section 4.5.2.5  
 Licensee Submittal: Pages II-13 and II-26 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del> , <del>3e</del> , <del>3f</del>
Equipment Environmental Qualification Review	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del> , <del>3e</del> , <del>3f</del> <del>3g</del> , <del>3h</del> , <del>3i</del> , <del>3j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>3a</del> , <del>3b</del>
Maintenance and Replacement Schedule Summary	<del>3a</del> , <del>3b</del> , <del>3c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 34**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 34

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 34

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 35

Equipment Item No. 35  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model 1-10  
 Actuates Shutdown Cooling System Valves (1-SD-2A, B; -5; -4A, B;  
 1-LP-2A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 35  
 Reference 19, Section 4.7.6  
 Licensee Submittal: Pages II-19, -20, and -25 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable - Deferred

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 35**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |

*Note - Cold Shutdown Equipment*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 35

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 36

Equipment Item No. 36  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-10  
 Actuates LPCI Pump Suction Valves (1-LP-2A, B, C, D), Actuates Core Spray  
 Injection Valves (1-CS-5A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 36  
 Reference 19, Section 4.6.4  
 Licensee Submittal: Pages II-2 and II-9a [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None.

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>3e</del> , <del>3f</del> , <del>3g</del> , <del>3h</del> , <del>3i</del> , <del>3j</del>
Equipment Environmental Qualification Review	<del>3k</del> , <del>3l</del> , <del>3m</del> , <del>3n</del> , <del>3o</del> , <del>3p</del> <del>3q</del> , <del>3r</del> , <del>3s</del> , <del>3t</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>3u</del> , <del>3v</del>
Maintenance and Replacement Schedule Summary	<del>3w</del> , <del>3x</del> , <del>3y</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 36

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 36

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:     
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 36

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 37**

Equipment Item No. 37  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-10  
 Actuates Containment Isolation Valves (1-CU-28), Actuates RHR Test Valves to  
 Torus (1-LP-43A, B)  
 Licensee reference not cited  
 Required Operating Time: less than 30 seconds  
 TER Checksheet No. 37  
 Reference 19, Section 4.5.2.4  
 Licensee Submittal: Pages II-23 and II-30 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 37

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 37**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate   X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:       
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies         
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification   X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life         
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 37

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventive Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 38

Equipment Item No. 38  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-4  
 Actuates Emergency Condensate Transfer Pump Discharge Valve (1-MW-96A)  
 Actuates Inboard Containment Spray Valves (1-LP-16A, B)  
 Actuates Torus Spray Valves (1-LP-13A, B; 14A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 38  
 Reference 19, Section 4.6.4  
 Licensee Submittal: Pages II-3, II-7, II-27, and II-29 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 38

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 39

Equipment Item No. 39  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-4  
 Actuates Reactor Clean-Up Pump Suction Valve (1-CU-5),  
 Actuates Containment Isolation Valve (1-CU-3)  
 Licensee reference not cited  
 Required Operating Time: 20 seconds  
 TER Checksheet No. 39  
 Reference 19, Section 4.5.2.4  
 Licensee Submittal: Pages II-15 and II-28 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 39

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 39

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 39

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982. In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 40

Equipment Item No. 40  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-4  
 Actuates Core Spray Test Valves (1-CS-21A, B)  
 Licensee reference not cited  
 Required Operating Time: Less than 30 seconds  
 TER Checksheet No. 40  
 Reference 19, Section 4.5.2.18  
 Licensee Submittal: Page II-37 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 40

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 40

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 40

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 41

Equipment Item No. 41  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-4  
 Actuates Core Spray Pump Suction Valves (1-CS-2A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 41  
 Reference 19, Section 4.6.4  
 Licensee Submittal: Page II-17 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 411

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 41

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 41

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 42

Equipment Item No. 42  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-40  
 Actuates Inboard LPCI System Injection Valves (1-LP-10A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 42  
 Reference 19, Section 4.6.4  
 Licensee Submittal: Page II-5 [23]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 42

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (~~has/has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other ( \_\_\_\_\_ )

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER 1982.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 42**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 42

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43

Equipment Item No. 43  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-40  
 Actuates Test Return to Torus Valves (1-LP-44A, B)  
 Licensee reference not cited  
 Required Operating Time: Less than 30 seconds  
 TER Checksheet No. 43  
 Reference 19, Section 4.5.2.14  
 Licensee Submittal: Page II-34 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 44

Equipment Item No. 44  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-40  
 Actuates Outboard Containment Spray Valves (1-LP-15A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 44  
 Reference 19, Section 4.6.4  
 Licensee Submittal: Page II-6 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section.3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, X, X, X
System Consideration Review	X, X, X, X, X, X
Equipment Environmental Qualification Review	X, X, X, X, X, X X, X, X, X
Installed TMI Lessons Learned Implementation Equipment Summary	X, X
Maintenance and Replacement Schedule Summary	X, X, X



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 44

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 44

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 44

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

Equipment Item No. 45  
 Motorized Valve Actuator Located in the Reactor Building  
 Teledyne Model T-40  
 Actuates Containment Isolation Valves (1-IC-3; 1-IC-2), Actuates Outboard LPCI Valves (1-LP-9A,B)  
 Licensee reference not cited  
 Required Operating Time: less than 30 seconds  
 TER Checksheet No. 45  
 Reference 19, Section 4.5.2.4  
 Licensee Submittal: Pages II-4, II-12, and II-36 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

Equipment Item No. 46  
 Limit Switches Located in the Steam Tunnel  
 NAMCO Snaplock  
 MSIV Position Indication (1-MS-2A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 46  
 Reference 19, Section 4.6.1  
 Licensee Submittal: Page V-2 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
  - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
  - Corrective action specified by the Licensee:
    - Equipment replacement with qualified equipment
    - Equipment modification
    - Equipment relocation above submergence level
    - Relocate or shield equipment from radiation source
    - Verify qualification by additional (testing/analysis)
    - Equipment relocation to a mild environment
    - Qualification testing of equipment in progress
    - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a <u>Qualified</u>               | II.c Qualified Life Deficiency |
| I.b <u>Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:       
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies         
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life         
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

Equipment Item No. 47  
 Limit Switches Located in the Drywell  
 NAMCO Model EA-740  
 MSIV Position Indication (1-MS-1A, B, C, D)  
 Licensee Reference 809  
 Required Operating Time: Continuous  
 TER Checksheet No. 47  
 Reference 19, Section 4.6.11  
 Licensee Submittal: Page V-1 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



Franklin Research Center  
A Division of The Franklin Institute  
20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

LICENSEE RESPONSE TO NRC SER

This equipment is sealed from the atmosphere with qualified equipment  
(SCEW III-7)



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48**

Equipment Item No. 48  
 Limit Switches Located in the Reactor Building  
 Micro-Switch Model DTF2-2RN  
 Containment Sump Isolation Valve Position Indication (1-SS-3, -4, -13, -14)  
 Licensee reference not cited  
 Required Operating Time: 22 seconds  
 TER Checksheet No. 48  
 Reference 19, Section 4.6.2  
 Licensee Submittal: Page V-11 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 49

Equipment Item No. 49  
 Limit Switches Located in the Reactor Building  
 Micro-Switch Model DTF2-2RN2  
 Containment Isolation Valve Position Indication (1-IC-6, -7;  
 1-AC-6, -7, -8, -11)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 49  
 Reference 19, Section 4.6.2  
 Licensee Submittal: Pages V-4, V-13, and V-14 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER -- CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, X, X, X
System Consideration Review	X, X, X, X, X, X
Equipment Environmental Qualification Review	X, X, X, X, X, X, X, X, X, X
Installed TMI Lessons Learned Implementation Equipment Summary	X, X
Maintenance and Replacement Schedule Summary	X, X, X



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 49

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action SEPTEMBER, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| I.a Qualified  | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                   | III.b Not in Scope             |
| II.b Not Qualified                                   | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 49

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment: Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 49

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

Equipment Item No. 50  
 Limit Switches Located in the Reactor Building  
 Micro-Switch Model 51ML76922  
 Containment Isolation Valve Position Indication (1-AC-12)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 50  
 Reference 19, Section 4.6.2  
 Licensee Submittal: Page V-17 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action: September 1982 refueling outage.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure: \_\_\_\_\_
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0598, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program.

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 51

Equipment Item No. 51  
 Limit Switches Located in the Reactor Building  
 Micro-Switch Model 51MLT6022  
 Containment Isolation Valve Position Indication (1-AC-9)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 51  
 Reference 19, Section 4.6.2  
 Licensee Submittal: Page V-15 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , 6b
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 51

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982 Refueling.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 51

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:     
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 51

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

Equipment Item No. 52  
 Limit Switches Located in the Reactor Building  
 Micro-Switch Model BAF1-2RN2  
 Containment Isolation Valve Position Indication (1-AC-~~6~~, -5, -10, -17;  
 1601-8A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 52  
 Reference 19, Section 4.6.2  
 Licensee Submittal: Pages V-12, -16, -18, -19, and -21 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A) S, (R), M, I, QM, RFN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SFR	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September, 1982 Refueling Outage.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53

Equipment Item No. 53  
 Limit Switches Located in the Turbine Building  
 Allen Bradley Model 802T-AW2 Ser-C  
 Condensate Pump Valve Position Indication (V2-3A, B; V2-1A, B)  
 Licensee reference not cited  
 Required Operating Time: Not stated  
 TER Checksheet No. 53  
 Reference 19, Section 4.6.9  
 Licensee Submittal: Pages V-3 and -4 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



Franklin Research Center  
A Division of The Franklin Institute  
20th and Race Streets, Phila. Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-70-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53

LICENSEE RESPONSE TO NRC SER

"The TER reference to the DITER is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal.

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53

Reason for Concurrence

\_\_\_ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page 4b-c)

Resultant NRC Qualification Evaluation Category (IIIa, IIIb)

Note 1: The Licensee (~~has~~ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page     )

Reason for Non-Concurrence

\_\_\_ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

\_\_\_ Backup (equipment/system) is not safety-related.

\_\_\_ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

\_\_\_ The rationale presented by the Licensee is not supported by objective technical evidence.

\_\_\_ Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 53

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 54

Equipment Item No. 54  
 Pressure Switch Located in the Reactor Building  
 Static-O-Ring Model 5N-AA3  
 LPCI System Permissive Signal (1501-72A, B, C, and D; 1501-82A, B, C, and D)  
 Licensee reference not cited  
 Required Operating Time: Not stated  
 TER Checksheet No. 54  
 Reference 19, Section 4.3.2.12  
 Licensee Submittal: Page XI-4 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 54

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/~~or~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b NOT in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 54**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 54

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 55

Equipment Item No. 55  
 Pressure Switch Located in the Reactor Building  
 Static-O-Ring Model 12N-AA4  
 Primary Containment Pressure (1501-83A, B, C, and D)  
 Licensee reference not cited  
 Required Operating Time: Not stated  
 TER Checksheet No. 55  
 Reference 19, Section 4.3.2.12  
 Licensee Submittal: Page XI-9 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, (RPN), EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del> , <del>3e</del> , <del>3f</del>
Equipment Environmental Qualification Review	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del> , <del>3e</del> , <del>3f</del> , <del>3g</del> , <del>3h</del> , <del>3i</del> , <del>3j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>3a</del> , <del>3b</del>
Maintenance and Replacement Schedule Summary	<del>3a</del> , <del>3b</del> , <del>3c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 55**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. SS

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 55

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 56

Equipment Item No. 56  
 Pressure Switch Located in the Reactor Building  
 Barksdale Model B2T-A12SS  
 LPCI System Line Break Detection (263-111A, B, C, D; 261-30A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Not Stated  
 TER Checksheet No. 56  
 Reference 19, Section 4.7.9  
 Licensee Submittal: Page XI-10 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 57**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b NOT in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 56

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 56

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 57

Equipment Item No. 57  
 Pressure Switch Located in the Reactor Building  
 Barksdale Model BIT-A12SS-CS  
 Reactor Low Pressure Trip (263-53A, B, C, and D)  
 Licensee reference not cited  
 Required Operating Time: Not Stated  
 TER Checksheet No. 57  
 Reference 19, Section 4.3.2.13  
 Licensee Submittal: Page XI-11 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>3e</del> , <del>3f</del> , <del>3g</del> , <del>3h</del> , <del>3i</del> , <del>3j</del>
Equipment Environmental Qualification Review	<del>3k</del> , <del>3l</del> , <del>3m</del> , <del>3n</del> , <del>3o</del> , <del>3p</del> , <del>3q</del> , <del>3r</del> , <del>3s</del> , <del>3t</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>3u</del> , <del>3v</del>
Maintenance and Replacement Schedule Summary	<del>3w</del> , <del>3x</del> , <del>3y</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 57

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 57

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

Equipment Item No. 58  
 Pressure Switch Located in the Reactor Building  
 Mercoid Model DA7043804R21E  
 Core Spray System Trip (1462A, B, C, and D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 58  
 Reference 19, Section 4.3.2.11  
 Licensee Submittal: Page XI-3 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

Equipment Item No. 59  
 Pressure Switch Located in the Reactor Building  
 Barton Model 288  
 Drywell Pressure (1621A, B, C, D; 1620A, B, C, D; 261-12A, B, C, D; 261-36A, B;  
 261-37A, B; 261-38A, B; 261-39A, B; 1349A, B; 1350A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 59  
 Reference 19, Section 4.3.2.10  
 Licensee Submittal: Page XI-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_ X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 60

Equipment Item No. 60  
 Pressure Switch Located in the Reactor Building  
 Meletron Model 372-6SS49A-292  
 Low Pressure Permissive for LPCI/Core Spray Valve (263-54A, B; 263-52C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 60  
 Reference 19, Section 4.3.2.9  
 Licensee Submittal: Page XI-1 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
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System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 60**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION (REVIEW OF EQUIPMENT ITEM NO. 60)

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 60

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

Equipment Item No. 61  
 Pressure Switch Located in the Turbine Building  
 Meletron Model 372  
 Suction Pressure Signal for Feedwater Pump Logic (PS-2-16, -20)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 61  
 Reference 19, Section 4.6.23  
 Licensee Submittal: Page XI-6 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <b>III.b Not in Scope</b>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

- Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)
- Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)
- Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

Reason for Non-Concurrence

- Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.
- Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.
- Backup (equipment/system) is subject to a potentially disabling single active failure.
- Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.
- Failure of the primary equipment can result in erroneous indication which could mislead an operator.
- Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

Reason for Concurrence

\_\_\_ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

X Other (see page 4b)

X Resultant NRC Qualification Evaluation Category (~~IIIa~~ IIIb)

X Note 1: The Licensee (~~has~~ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3a)

Reason for Non-Concurrence

\_\_\_ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

\_\_\_ Backup (equipment/system) is not safety-related.

\_\_\_ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

\_\_\_ The rationale presented by the Licensee is not supported by objective technical evidence.

\_\_\_ Other (see page \_\_\_)

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HEBB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

Equipment Item No. 62  
 Pressure Switch Located in the Reactor Building  
 Meletron Model 9201-2L  
 LPCI Drywell High Pressure Interlock (1501-90A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 62  
 Reference 19, Section 4.3.2.9  
 Licensee Submittal: Page XI-8 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/nas not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/~~or~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.

## TECHNICAL EVALUATION REPORT

### REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY EVALUATION REPORTS (F-11, B-60)

NORTHEAST NUCLEAR ENERGY COMPANY  
MILLSTONE NUCLEAR POWER PLANT UNIT 1

VOL. 2 OF 2 — *Docket  
File*

NRC DOCKET NO. 50-245

FRC PROJECT C5257

NRC TAC NO. 42523

FRC ASSIGNMENT 13

NRC CONTRACT NO. NRC-03-79-118

FRC TASK 459

*Prepared by*

Franklin Research Center  
20th and Race Street  
Philadelphia, PA 19103

FRC Group Leader: C. J. Crane

*Prepared for*

Nuclear Regulatory Commission  
Washington, D. C. 20555

Lead NRC Engineer: N. B. Le  
P. Shemanski

May 28, 1982

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## TECHNICAL EVALUATION REPORT

### REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY EVALUATION REPORTS (F-11, B-60)

NORTHEAST NUCLEAR ENERGY COMPANY  
MILLSTONE NUCLEAR POWER PLANT UNIT 1

VOL. 2 OF 2

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May 28, 1982

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

Equipment Item No. 63  
 Pressure Switch Located in the Turbine Building  
 Dual Snap Model 604  
 Trip Logic for Condensate Booster Pump (PS-2-8, -9, -52, -53)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 63  
 Reference 19, Section 4.6.22  
 Licensee Submittal: Page XI-5 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lesson, Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER -- ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

Reason for Concurrence

The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page 4b)

Resultant NRC Qualification Evaluation Category (~~IIIb~~/IIIb)

Note 1: The Licensee (~~has~~/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3a)

Reason for Non-Concurrence

Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

Backup (equipment/system) is not safety-related.

This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

The rationale presented by the Licensee is not supported by objective technical evidence.

Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

Equipment Item No. 64  
 Pressure Switch Located at the Top of the Torus  
 Custom Component Model 630VH410S  
 Actuates Torus to Reactor Building Vacuum Relief Valves (1601-25A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 64  
 Reference 19, Section 4.6.14  
 Licensee Submittal: Page XI-7 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| I.a Qualified                                      | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> II.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                 | III.b Not in Scope             |
| II.b Not Qualified                                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

Equipment Item No. 65  
 Pressure Switch Located in the Turbine Building  
 Square D Model AGW 24 Class 9012  
 Feedwater Pump Low Pressure Trip (PS-2-39A,B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 65  
 Reference 19, Section 4.6.24  
 Licensee Submittal: Page XI-7 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

\_\_\_ Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

\_\_\_ Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIfb)

\_\_\_ Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

\_\_\_ Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

\_\_\_ Backup (equipment/system) is subject to a potentially disabling single active failure.

\_\_\_ Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

\_\_\_ Failure of the primary equipment can result in erroneous indication which could mislead an operator.

\_\_\_ Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

Reason for Concurrence

\_\_\_ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page 46)

Resultant NRC Qualification Evaluation Category (~~IIIb~~ IIIb)

Note 1: The Licensee (~~has~~ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3a)

Reason for Non-Concurrence

\_\_\_ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

\_\_\_ Backup (equipment/system) is not safety-related.

\_\_\_ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

\_\_\_ The rationale presented by the Licensee is not supported by objective technical evidence.

\_\_\_ Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

Equipment Item No. 66  
 Pressure Transmitter Located in the Reactor Building  
 General Electric Model 551032GAAW1  
 Reactor Pressure Indication (647-A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 66  
 Reference 19, Section 4.3.2.14  
 Licensee Submittal: Page XI-12 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/~~or~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

Equipment Item No. 67  
 Level Switch Located in the Reactor Building  
 Yarway Model 4418CE  
 LPCI Low-Low Level Indication (263-73A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 67  
 Reference 19, Section 4.7.8  
 Licensee Submittal: Page VII-4 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, PPS, None,

Not stated, Not applicable  
 MILP

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

LICENSEE RESPONSE TO NRC SER

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

Equipment Item No. 68  
 Level Switch Located in the Reactor Building  
 Yarway Model 4418C  
 Low Reactor Water Level Indication (263-57A, B; -72A, B, C, D; -58A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 68  
 Reference 19, Section 4.3.2.3  
 Licensee Submittal: Page VII-1 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure: \_\_\_\_\_
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

LICENSEE RESPONSE TO NRC SER

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

Equipment Item No. 69  
 Level Switch Located in the Condenser Bay of the Turbine Building  
 Magnetrol Model 730  
 Monitors Condenser Level for Condensate Pump Logic (LS-2-3, -4, -23, -24)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 69  
 Reference 19, Section 4.6.21  
 Licensee Submittal: Page VII-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate \_\_\_\_\_  
 Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_  
 Aging Degradation Evaluated Adequately \_\_\_\_\_  
 Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_  
 Program Established to Identify Aging Degradation \_\_\_\_\_  
 Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_  
 Criteria Regarding Temperature/Pressure Exposure:  
   o Peak Temperature Adequate \_\_\_\_\_  
   o Peak Pressure Adequate \_\_\_\_\_  
   o Duration Adequate \_\_\_\_\_  
   o Required Profile Enveloped Adequately \_\_\_\_\_  
   o Steam Exposure (If Required) Adequate \_\_\_\_\_  
 Criteria Regarding Spray Satisfied \_\_\_\_\_  
 Criteria Regarding Submergence Satisfied \_\_\_\_\_  
 Criteria Regarding Radiation Satisfied \_\_\_\_\_  
 Criteria Regarding Test Sequence Satisfied \_\_\_\_\_  
 Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_  
 Criteria Regarding Functional Testing Satisfied \_\_\_\_\_  
 Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_  
 Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_  
 Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a Equipment Qualified \_\_\_\_\_  
 I.b Equipment Qualification Pending Modification \_\_\_\_\_  
 II.a Equipment Qualification Not Established \_\_\_\_\_  
 II.b Equipment Not Qualified \_\_\_\_\_  
 II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_  
 III.a Equipment Exempt From Qualification \_\_\_\_\_  
 III.b Equipment Not in the Scope of the Qualification Review X  
 IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

LICENSEE RESPONSE TO NRC SER

"The TER reference to the DITER is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal.

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

Reason for Concurrence

\_\_\_ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page 46)

Resultant NRC Qualification Evaluation Category (IIIa/IIIb)

Note 1: The Licensee (~~has~~ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page     )

Reason for Non-Concurrence

\_\_\_ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

\_\_\_ Backup (equipment/system) is not safety-related.

\_\_\_ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

\_\_\_ The rationale presented by the Licensee is not supported by objective technical evidence.

\_\_\_ Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

Equipment Item No. 70  
 Level Transmitter Located in the Reactor Building Torus (Area T-10)  
 Gould Model PD3018-400-38-11-10-55-40  
 Torus Water Level (LT-1630A, B)  
 Licensee Reference 828  
 Required Operating Time: Continuous  
 TER Checksheet No. 70  
 Reference 19, Section 4.7.4  
 Licensee Submittal: Page XV-17 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R) M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, <del>5c</del> , 5d, 5e, 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982 (next refueling outage).)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____X
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____X
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z0

LICENSEE RESPONSE TO NRC SER

10. Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

12. Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I    ; NUREG-0588, Cat. II    .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
--	-----------------------	--------------------------------	----------------------------------

EQUIPMENT DESCRIPTION

Equipment Type	Level Transmitter	Transmitter	
Manufacturer's Name (5.2.2/-/-)	Goold	• Pressure transmitter S/W 29964 (0 - 300 PSIG Range)	X - see note 3
Model Number (5.2.2/-/-)	PD-3018-	PDH 3000 - 300 - 18 - 11	
Serial Number	400 - 38 - 11 - 55 - 40	and • PD 3018 - 200 - 38 - 66 - C50 (0 - 200" W.C. Range) (differential pressure) S/N 24389	
Features/Mounting (5.2.6/-/-)			
Connections/Interfaces (5.2.6/-/-)			
Location/Elevation	Ry BLDG. TORUS (T-10)		Torus water level monitoring
Equipment ID No.	LT-1630A(B)		

QUALIFICATION REPORT

Report ID Number (8.0/5.0/5.0)		58477 Rev. A	[ 828 ]
Report Date		5-5-80	
Issued by		Wayle Lake	
Prepared for		Goold Inc.	
Referenced Reports			

Qualification Method  
(5.1, 5.3/2.1, 2.4/2.1, 2.4)

Test

Test

QUALIFICATION TEST PROGRAM  
Functional Test Description  
(5.2.5/2.2.9/2.2.9)

Operating Conditions  
(-/2.2.10/2.2.10)  
Load/Cycles/Voltage/  
Current/Freq.

The DP unit was  
tested at one point  
Zero inches of water  
No anomalies noted



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0568-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)			
Accuracy (5.2.5/-/-)		1.76% F.S.	see note 2
Number of Specimens			
Test Instruments Calibrated			
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active		
Test Duration (5.2.1/-/-)			
Accident Duration (Envir. Above Normal) (5.2.1/-/-)			
Required Function Time	Continuous		
Test Sequence (General) (5.2.3/2.3.1/2.3.1)		0-300 PSIG Range subjected to seismic, irradiation, functional testing	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)		0-200 PSIG Range subjected to irradiation and functional testing	
1. Representative Sample			
2. Baseline Data			
3. Performance Extremes			
4. Thermal Aging			
5. Radiation Aging			
6. Wear Aging			
7. Vibration/Seismic			
8. DBE Exposure			
9. Post-DBE Exposure			
10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0)			
Thermal Aging/Basis		None	X
Material Aging Evaluation (7.0/-/-)			
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)			
Radiation Aging, Type		None	X



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA		
Radiation Type	gamma		
Radiation Dose (rd) (4.1.2/1.4/1.4)			
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)			
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)			
Equipment Susceptible to Beta Radiation (4.1.2/-/-)			
Radiation Dose (Normal + Accident) (4.1.2/-/-)	$2.1 \times 10^6$ Rads	Both specimens subjected to $2.26 \times 10^7$ Rads	see note 1
Plateout Dose Considered (-/1.48/1.48)			
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Zo

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase	—		
Peak: °F/psig/RH/Time	<i>No change</i>		
Decrease To: °F/psig/RH/Time	<i>see checklist</i>		<i>see checklist 3c</i>
Decrease To: °F/psig/RH/Time	<i>3c</i>		
Decrease To: °F/psig/RH/Time	—		
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	—		
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	<i>NA</i>		
Spray Composition (4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)	<i>N/A</i>		
Spray Density (gpm/ft <sup>2</sup> )	<i>NA</i>		
Spray Duration	<i>NA</i>		
Submergence Duration (4.1.3/2.2.5/2.2.5)	<i>NA</i>		
In-Leakage Considered (5.2.6, 5.3.2/-/-)	<i>NA</i>		
Time to Submergence	<i>NA</i>		
Dust Environment (-/2.2.11/2.2.11)	<i>NA</i>		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

NOTES:

(1.) The 200 inch W.C. DP transmitter apparently survived  $2.26 \times 10^7$  rads of irradiation. After irradiation the white diaphragms were distorted (bulged) <sup>outward</sup> a noticeable amount indicating possible outgassing effects. No other anomalies were noted.

(2.) Irradiation to  $2.26 \times 10^7$  rads caused a maximum zero point drift of 1.76% full scale.

(3.) Test specimen model number relationship to the installed transmitter at Millstone Unit 1 has not established.



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71**

Equipment Item No. 71  
 Flow Switch Located in the Reactor Building  
 PEECO Model HP-F  
 Verifies LPCI Pump Operation (150I-31A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 71  
 Reference 19, Section 4.3.2.4  
 Licensee Submittal: Page V17-3 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>X</del> , <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <b>III.b Not in Scope</b>      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

Equipment Item No. 72 (TMI Action Plan Item II.D-3)  
 Accelerometer for Acoustic Monitoring System Located in the Drywell  
 Endevco Model 2273AM20  
 Relief Valve Flow Indication (LS-203A, B, C, D, E, F)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 72  
 Reference 19, Section 4.7.2  
 Licensee Submittal: Page XV-15 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>X</del> , <del>X</del> , <del>X</del>
System Consideration Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Equipment Environmental Qualification Review	<del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del> , <del>X</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, <del>X</del>
Maintenance and Replacement Schedule Summary	<del>X</del> , <del>X</del> , <del>X</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
  - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
  - Corrective action specified by the Licensee:
    - Equipment replacement with qualified equipment
    - Equipment modification
    - Equipment relocation above submergence level
    - Relocate or shield equipment from radiation source
    - Verify qualification by additional (testing/analysis)
    - Equipment relocation to a mild environment
    - Qualification testing of equipment in progress
    - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action March - April 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

LICENSEE RESPONSE TO NRC SER

In response to TMI Item 2.1.3a, the B & W monitoring system was installed during the June/July 1980 shutdown. It is undergoing test now to the requirements of IEEE 323/344. Specific qualification data will be supplied after test completion in January, 1982.  
Babcock & Wilcox, valve monitoring system test program  
3/21/80.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981 (sections are identified below). Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

This plant is a PWR     , BWR X.  
 The NSSS Vendor is Westinghouse (W)     , Babcox & Wilcox (B&W)     ,  
 Combustion Engineering (CE)     , General Electric (GE) X.

With respect to this equipment item, it is noted (applicable section checked):

- The Licensee does not provide adequate information with respect to identification of TMI Action Plan equipment installed as of 1/1/81.
- The Licensee has not provided the correlation of this equipment item with the specific sections of NUREG-0737. [The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and the terminal blocks associated with the device also identified?]
- The Licensee has not provided the approximate installation date for the TMI Action Plan equipment items so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
- The Licensee has provided a standard Owners' Group position with respect to a NUREG-0737 technical area.
- The Licensee has requested extensions of implementation dates.
- The Licensee has stated that this equipment item is associated with the following section of NUREG-0737. (This list of applicable NUREG-0737 sections has been identified by NRC as sections within the scope of this review):
  - II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment
  - X II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

Equipment Item No. 73 (TMI Action Plan Item II.D-3)  
 Acoustic Monitoring Preamplifier Located in the Drywell  
 Endeveco Model 22CA-TR  
 Relief Valve Flow Indication (LS-203A, B, C, D, E, F)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 73  
 Reference 19, Section 4.7.3  
 Licensee Submittal: Page XV-16 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

E, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action March - April, 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <b>I.B</b> Modification            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z3

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

LICENSEE RESPONSE TO NRC SER

LS-203 B, C, D, E, F

In response to TMI Item 2.1.3a, the B & W monitoring system was installed during the June/July 1980 shutdown. It is undergoing test now to the requirements of IEEE 323/344. Specific qualification data will be supplied after test completion in January, 1982.

Babcock & Wilcox, valve monitoring system test program 3/21/80.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981 (sections are identified below). Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

This plant is a PWR     , BWR X.  
 The NSSS Vendor is Westinghouse (W)     , Babcox & Wilcox (B&W)     ,  
 Combustion Engineering (CE)     , General Electric (GE) X.

With respect to this equipment item, it is noted (applicable section checked):

- The Licensee does not provide adequate information with respect to identification of TMI Action Plan equipment installed as of 1/1/81.
- The Licensee has not provided the correlation of this equipment item with the specific sections of NUREG-0737. [The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and the terminal blocks associated with the device also identified?]
- The Licensee has not provided the approximate installation date for the TMI Action Plan equipment items so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
- The Licensee has provided a standard Owners' Group position with respect to a NUREG-0737 technical area.
- The Licensee has requested extensions of implementation dates.
- The Licensee has stated that this equipment item is associated with the following section of NUREG-0737. (This list of applicable NUREG-0737 sections has been identified by NRC as sections within the scope of this review):
  - II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment
  - X II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position



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 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

Equipment Item No. 74  
 Relay Located in the Reactor Building  
 Chromalox Model D2936-25  
 Actuates Cooling Water Flow to LPCI Pump Motors (V10-4A, B; V10-5A, B)  
 Licensee reference not cited  
 Required Operating Time: Less than 30 seconds  
 TER Checksheet No. 74  
 Reference 19, Section 4.6.12  
 Licensee Submittal: Page VIII-1 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| I.a Qualified  | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                   | III.b Not in Scope             |
| II.b Not Qualified                                   | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

Equipment Item No. 75  
 Temperature Element Located in the Reactor Building  
 Conax Model RTD  
 Measures Torus Water Temperature (1601-50, 1601-51; 14 of each)  
 Licensee Reference 3617  
 Required Operating Time: Continuous  
 TER Checksheet No. 75  
 Licensee Submittal: Page IX-6 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable replacement equipment

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a</u> Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                        | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

Checksheets 5a thru 5f have been removed due to the proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

Equipment Item No. 76  
 Temperature Switch Located in the Steam Tunnel  
 Fenwal Model 17002-40  
 Detects Steam Tunnel High Temperature (261-15A-D, 16A-D, 17A-D, 18A-D)  
 Licensee References 28, 824, 827, and 1792  
 Required Operating Time: 5 seconds  
 TER Checksheet No. 76  
 Reference 19, Section 4.5.2.10  
 Licensee Submittal: Page IX-1 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R) T, QI, RT, P, H, CS, (A) S, (R), M, I, (QM) RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action July September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	<u>X</u>
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u>
Program Established to Identify Aging Degradation	<u>X</u>
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	<u>X</u>
o Steam Exposure (If Required) Adequate	<u>X</u>
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	<u>X</u>
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program:

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



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**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ZZ**

Equipment Item No. 77 (TMI Action Plan Item)  
 Radiation Detector Located in the Drywell  
 General Atomic Model RD-23  
 Post-Accident Radiation Monitor  
 Licensee References 1722, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2848,  
 3445, 3446, and 3447  
 Required Operating Time: Continuous  
 TER Checksheet No. 77  
 Reference 19, Section 4.7.1  
 Licensee Submittal: Page X-1 [22]

DESIGNATION FOR DEFICIENCIES IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable  
Deferred

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Response to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Awaiting qualification documentation from the vendor
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a</u> Qualification Not Established | III.b Deferred                 |
| II.b Not Qualified                        | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	<u>X</u>
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u>
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	<u>X</u>
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	<u>X</u>
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Evaluation Deferred	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

LICENSEE RESPONSE TO NRC SER

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

The containment high range radiation monitor systems (detector assembly, read out module and power supply) are considered fully qualified as so indicated on SCEW Sheet X-1.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I    ; NUREG-0588, Cat. II    .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	RADIATION DETECTOR	HIGH RANGE RADIATION MONITOR	
Manufacturer's Name (5.2.2/-/-)	GENERAL ATOMIC	GENERAL ATOMIC	
Model Number (5.2.2/-/-)	RD-23	RD-23	
Serial Number		Y-501; Y-1894-A	
Features/Mounting (5.2.6/-/-)	ND	REUTER STOKES RS-C3-1006-201 DETECTOR ASSEMBLY	
Connections/Interfaces (5.2.6/-/-)	ND	ROCKBESTOS COAX RAYCHEM WCSF (splice sleeves)	X - see page 5 of 5 and 5h note 1
Location/Elevation	DRYWELL		
Equipment ID No.			
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number		E-254-960	
Report Date		DECEMBER 15, 1980	
Issued by		GENERAL ATOMIC	
Prepared for		GENERAL ATOMIC	
Referenced Reports			
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)			
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)		leakage current check	
Operating Conditions (-/2.2.10/2.2.10)			
Load/Cycles/Voltage/ Current/Freq.			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)			
Accuracy (5.2.5/-/-)			
Number of Specimens		2	
Test Instruments Calibrated			
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	Post ACCIDENT MONITORING		
Test Duration (5.2.1/-/-)			
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	154 HRS		
Required Function Time	CONTINUOUS		
Test Sequence (General) (5.2.3/2.3.1/2.3.1)		LOCA/SEIS/	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)			
1. Representative Sample			
2. Baseline Data			
3. Performance Extremes			
4. Thermal Aging			
5. Radiation Aging			
6. Wear Aging			
7. Vibration/Seismic			
8. DBE Exposure			
9. Post-DBE Exposure			
10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	40YR/135°F	NONE	X - see page 5 for sig, 5h note 3
Material Aging Evaluation (7.0/-/-)		GENERAL ATOMIC E-115-699	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)			
Radiation Aging, Type	GAMMA		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	3.8x10 <sup>6</sup> Rad	NONE	
Radiation Aging, Dose Rate	-		
Radiation Aging, Method	-		
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)			
Operational Aging (-/4.2/-)			
Other Age Conditioning (-/4.2/-)		Age conditioning margin test on interconnected assemblies	
Qualified Life Claimed/ Established (5.2.4/4.10/-)		3 days, 3 cycle 60°C, 80-90%rh	
Normal Ambient Temperature	135 °F		
Normal Ambient Radiation	-		
Normal Ambient Humidity	-		
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	yes		
On-Going Analysis of Failures and Degradation (7.0/-/-)	yes	ANALYSIS OF TRANSIENT EFFECTS DURING LOCA DUE TO PIEZOELECTRIC EFFECTS	
Margin (General) (6.0/3.0/3.0)		ANALYSIS OF INDUCED GAMMA HEATING	
Margin (NUREG-0588, Cat. I) (-/3.2/-)			
1. Temperature (+15°F)			
2. Pressure (+10%, 10 psig max)			
3. Radiation (not required)			
4. Time (+10%, +1 hour + function time minimum)			





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA		
Radiation Type	GAMMA	NONE	
Radiation Dose (rd) (4.1.2/1.4/1.4)	$9.1 \times 10^7$ Rad		
Radiation Dose Rate (rd/hr)	-		
Radiation Qual. Method (5.3.1/-/-)	-		
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	-		
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	-		
Radiation Dose (normal + Accident) (4.1.2/-/-)	$9.4 \times 10^7$ Rad	NONE	X - see page 5 and 59, 5h note 2
Plateout Dose Considered (-/1.48/1.48)	-		
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	-		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase	ND.	7°F, 1.5 psi/sec.	
Peak: °F/psig/RH/Time	310/44/100/-	400/57/100/100/10 min	
Decrease To: °F/psig/RH/Time	276/24/100/14H	400 to 175/57 to 0/100/100/102.4 hours	
Decrease To: °F/psig/RH/Time	160/12/100/110H	175 to 411/0 to 53/100/8 sec	
Decrease To: °F/psig/RH/Time		390/57/100/10 min	
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	NA	330/57/100/10 to 30 min 305/57/100/30m to 1hr 260/40/100/1h to 4hr 205/46/100/4 Days 150/4.5-10/100/4 To 18 Days	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		Test	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	Demin Water	0.28 M H <sub>3</sub> BO <sub>3</sub> 0.064 M Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	
Spray Density (gpm/ft <sup>2</sup> )	ND	0.15 gpm/ft <sup>2</sup>	
Spray Duration	ND	Continuous after 10 min.	
Submergence Duration (4.1.3/2.2.5/2.2.5)	NA	NA	
In-Leakage Considered (5.2.6, 5.3.2/-/-)	NA	NA	
Time to Submergence	NA	NA	
Dust Environment (-/2.2.11/2.2.11)	NA	NA	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

NOTES: *General discussion -*

*The radiation monitor system (HIGH RANGE) installed at Millstone Unit 1 was purchased prior to the testing. Reference 8 stated the following regarding this equipment:*

- " QUALIFICATION DISCREPANCY: \_\_\_\_\_
- These components lack documented qualification data. \_\_\_\_\_
- SAFETY FUNCTION AND JUSTIFICATION FOR CONTINUED OPERATION: \_\_\_\_\_
- This equipment is purchased on a risk release basis pending completion of the vendor test report and our subsequent review and acceptance. The vendor has tested this equipment to the requirements and parameters identified in IEEE Std 323-1974, Appendix A. The applicable qualification documentation references will be identified when received. Vendor has estimated the test report completion date to be December 1980.
- Due to the desirability of long-term operability of this equipment, they will be replaced with qualified equipment. This will be accomplished as soon as practicable prior to June 30, 1982, assuming that procurement " delays do not preclude replacement by that date.

*test*

*The licensee has presented information which shows that the RD-23 radiation detector is qualified for Millstone environmental parameters. However the testing showed deficiencies with the original cable and connections interfacing with this detector. These original cable and connections may be identical to those used at Millstone (currently installed). It should be noted that the testing program identified*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

NOTES:

*several modifications of interface to obtain a satisfactory connector. However, the coaxial cable has not yet been qualified (see review of equipment item 94). The test report [2898] stated:*

"Although the coaxial cable was not part of the specimen per se, that is, it was not being qualified, the connector/cable interface was. Therefore, the cable difficulties shall be described also.

Cable difficulties encountered were outer jacket softening with subsequent shield shorting at mechanical contact points, and outer jacket bubbling with subsequent splitting. These two problems were apparently eliminated with the addition of Raychem WOSP shrink tube at areas of coaxial cable stress points and over the cable terminating connector thus effectively sealing the cable end from the environment. Although the cable was previously considered "qualified" for LOCA applications, these evidences exist which imply careful lead preparation upon installation is necessary for this probe/electronics system.

A connector corrosion problem was also corrected with the addition of the Raychem sleeve buildup over the connector.

The final configuration was necessary only for the longer duration test (two weeks), Number 3. The two tests prior to that time did not utilize the Raychem configuration, however, they did employ a sheet metal cover over the connector area (box-shaped) below the probe tip; i.e., the connectors were enclosed with wires exiting the bottom. In test Number 3, the connector area was left open. Four re-tests of test Number 3 were necessary due to the aforementioned problem areas.

Per GAC personnel, the specimen performed acceptably throughout the 18-day Number 3 LOCA test and the shorter Number 1 and 2 tests. Since GAC recorded and retained the specimen output data and have not conveyed the failure criteria to Wyle, they are necessarily charged with the responsibility for reporting what detailed functional results are necessary. "



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

NOTES:

Based on these considerations, the following deficiencies are specifically noted:

- (1.) Adequate similarity between the presently installed equipment and the test specimen (connector and cable) interfaces that successfully passed the testing program has not been established.
- (2.) The entire detector assembly including interface (cable + connector) has not been exposed to radiation testing or analysis.
- (3.) Although a satisfactory aging analysis was performed on the detector, no similar analysis was performed on the connector.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981 (sections are identified below). Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

This plant is a PWR     , BWR X.

The NSSS Vendor is Westinghouse (W)     , Babcox & Wilcox (B&W)     ,  
Combustion Engineering (CE)     , General Electric (GE) X.

With respect to this equipment item, it is noted (applicable section checked):

- The Licensee does not provide adequate information with respect to identification of TMI Action Plan equipment installed as of 1/1/81.
- The Licensee has not provided the correlation of this equipment item with the specific sections of NUREG-0737. [The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and the terminal blocks associated with the device also identified?]
- The Licensee has not provided the approximate installation date for the TMI Action Plan equipment items so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
- The Licensee has provided a standard Owners' Group position with respect to a NUREG-0737 technical area.
- The Licensee has requested extensions of implementation dates.
- The Licensee has stated that this equipment item is associated with the following section of NUREG-0737. (This list of applicable NUREG-0737 sections has been identified by NRC as sections within the scope of this review):
  - II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment
  - II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position

X H<sub>1</sub> Range Radiation Monitor



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

Equipment Item No. 78  
 Radiation Monitor Located in the Reactor Building  
 General Electric Model 194X927  
 SGBT Initiation on High Radiation (1735CH-A, B; 1740CH-1, 2)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 78  
 Reference 19, Section 4.3.2.8  
 Licensee Submittal: Page X-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

Equipment Item No. 79  
 Electrical Penetrations Located in the Drywell  
 General Electric Type NS  
 Electrical Continuity Pressure Boundary (X-100A, B, D; X-103; X-104D; X-102;  
 X-105B, D; X-101A, C; X-100D, E; X-102; X-104A, B, C, E; X-106A; X-108A)  
 Licensee References 10, 811 and 812  
 Required Operating Time: Continuous  
 TER Checksheet No. 79  
 Reference 19, Section 4.6.6  
 Licensee Submittal: Pages III-1, -2, -3 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, QI, RT, P, H, CS, (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.d Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.

*Correlation between Test Report and installed equipment was provided by the NSSS supplier.*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

LICENSEE RESPONSE TO NRC SER

Extensive testing of the devices by the manufacturer meets the requirements of the guidelines.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Refer to references Q-7, 8, & 9 for qualification of equipment. Reference Q-9 states the applicability of the vendor's qualification methods.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

Equipment Item No. 80  
 Terminal Blocks Located in the Drywell and the Reactor Building  
 General Electric Model EB-25  
 Electrical System Continuity and Wire Termination (1-MS-1A)  
 Licensee References 718 and 3619  
 Required Operating Time: Continuous  
 TER Checksheet No. 80  
 Reference 19, Section 4.6.8  
 Licensee Submittal: Page III-4 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, Q1, RT, P, H, (CS), (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DRE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.

*See notes on page 5f*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

LICENSEE RESPONSE TO NRC SER

The blocks are installed in enclosures.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity. Refer to Section B.5 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

NOTES:

Note 1: The licensee has stated that the terminal blocks are installed in enclosures (page 3-a). Reference 718 indicates satisfactory performance of the GE, EB-25 terminal blocks.

Note 2: Reference 3619 provides an aging analysis and contains radiation test data on the GE, EB-25 terminal blocks. The report envelopes the Millstone accident conditions.

Note 3: Reference 718 indicates that the terminal blocks in the test were exposed to 323°F during one cycle and 318°F during a subsequent cycle. The test data envelopes the conditions described in reference 42. The terminal blocks are considered qualified for the revised Millstone temperature profile.



Franklin Research Center  
 A Division of The Franklin Institute  
 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

Page  
 1a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

Equipment Item No. 81  
 Terminal Block Located in the Reactor Building  
 General Electric Model CR151  
 Electrical System Continuity and Wire Termination  
 Licensee References 814 and 3632  
 Required Operating Time: Continuous  
 TER Checksheet No. 81  
 Licensee Submittal: Page III-5 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable  
New Item

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , 3c, <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. FI

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

Checksheets 5a thru 5f have been removed due to the  
proprietary nature of information contained therein.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

Equipment Item No. 82  
 Electrical Connector Located in the Drywell  
 Conax Model N-11001-32  
 Connection and Seal for MSIV Limit Switches (1-MS-1A, B, C, D;  
 1CU-2A)  
 Licensee Reference 2178  
 Required Operating Time: Continuous  
 TER Checksheet No. 82  
 Reference 19, Section 4.3.1.2  
 Licensee Submittal: Page III-7 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83**

Equipment Item No. 83  
 Electrical Connector Located in the Drywell  
 Ideal Set Screw Type MARR  
 Electrical Connection in Various Systems  
 Licensee Reference 905  
 Required Operating Time: Continuous  
 TER Checksheet No. 83  
 Reference 19, Section 4.3.3.1  
 Licensee Submittal: Page III-8 [42]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~), provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate X \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied X \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

Equipment Item No. 84  
 Electrical Connector Located in the Turbine Building  
 Burndy, Pad and Tape Type  
 Electrical Connection (1-SW-9)  
 Licensee Reference 3624  
 Required Operating Time: Continuous  
 TER Checksheet No. 84  
 Reference 19, Section 4.6.19  
 Licensee Submittal: Page III-15 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982 (refueling outage).)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                                     | II.c Qualified Life Deficiency |
| <input checked="" type="radio"/> I.b Modification | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*Note - The environmental conditions are not severe (118°F, 0.3 psig for 3 1/2 min max) and the device is simple. It may be possible to qualify by a relatively simple analysis and this avoid replacement.*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982. In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

Equipment Item No. 85  
 Electrical Connector Located in the Reactor Building  
 Burndy, Pad and Tape Type  
 Electrical Connection (1401A, B; M8-75A through D)  
 Licensee Reference 3624  
 Required Operating Time: Continuous  
 TER Checksheet No. 85  
 Reference 19, Section 4.6.16  
 Licensee Submittal: Page III-11 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
  - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
  - Corrective action specified by the Licensee:
    - Equipment replacement with qualified equipment
    - Equipment modification
    - Equipment relocation above submergence level
    - Relocate or shield equipment from radiation source
    - Verify qualification by additional (testing/analysis)
    - Equipment relocation to a mild environment
    - Qualification testing of equipment in progress
    - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

Equipment Item No. 86  
 Electric Connectors Located in the Reactor Building  
 Burndy, Ring Tongue/Butt Splice and Tape  
 Electrical Connection in Various Systems  
 Licensee Reference 3624  
 Required Operating Time: Continuous  
 TER Checksheet No. 86  
 Reference 19, Section 4.6.17  
 Licensee Submittal: Pages III-12 and III-13 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a, 3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph

10.



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

Equipment Item No. 87  
 Electrical Connector Located in the Steam Tunnel  
 Burndy, Ring Tongue/Butt Splices and Tape  
 Electrical Connection in Various Systems (1-MS-2A, B, C, D; 1-MS-6)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 87  
 Reference 19, Section 4.6.15  
 Licensee Submittal: Page III-10 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action Systember 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

Equipment Item No. 88  
 Electrical Connector Located in the Drywell  
 Burndy, Ring Tongue and Tape Type  
 Electrical Connection in Various Systems (1-IC-1, -4; 1-MS-5; 1-SM-1;  
 1-CU-2, -2A; 1-MS-1A, B, C, D [DC SOL.]  
 Licensee Reference 3620  
 Required Operating Time: Continuous  
 TER Checksheet No. 88  
 Reference 19, Section 4.6.15  
 Licensee Submittal: Page III-9 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action September 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate
  - o Peak Pressure Adequate
  - o Duration Adequate
  - o Required Profile Enveloped Adequately
  - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8X

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Replacement Schedule

The replacement of this equipment is scheduled to occur during the next refueling outage currently scheduled for September, 1982.

In the event that the replacement schedule is subsequently modified, the Staff will be notified of the revised schedule in subsequent correspondence.

Disposition of Unqualified Equipment

Due to the desirability of long term operability of this equipment and in conformance with existing license requirements, they will be replaced with fully qualified devices. Refer to generic paragraph 10.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

Equipment Item No. 89  
 Electrical Cable Splice Located in the Drywell  
 Raychem Type WCSF-N  
 Electrical Connection in Various Systems  
 Licensee References 29 and 815  
 Required Operating Time: Continuous  
 TER Checksheet No. 89  
 Reference 19, Section 4.5.2.8  
 Licensee Submittal: Page III-6 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a, 3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified ~~and/or will function when exposed to the applicable DBE environmental service conditions.~~
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.

*Previously Identified Deficiencies  
were resolved by license response  
P-3a.*



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

The device combination of cable/splice have been tested together to demonstrate compatibility as stated in Q-15, MIRL #1-64-78. These devices have been tested with Borated Water which is more severe than demineralized water.

These devices have been irradiated to a total value of  $2 \times 10^8$  as stated in Q-12.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

Equipment Item No. 90 (TMI Action Plan Item II.D-3)  
 Electrical Cable Located in the Drywell  
 Endeeco & Unholtz-Dickie 3075M6  
 Acoustic Monitoring System (LS-203A, B, C, D, E, F)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 90  
 Reference 19, Section 4.7.5  
 Licensee Submittal: Page IV-26 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable  
Detenned

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action March - April 1982.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*Equipment being Tested.*



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

LICENSEE RESPONSE TO NRC SER

This equipment has been procured on a risk release basis pending completion of vendor qualification testing, NUSCO review, and acceptance of the final reports. The target date for receipt of the final test report is tentatively March - April 1982. The qualification documentation references will be identified at that time.

The qualified life for this equipment will be determined in accordance with IEEE 323-1974 guidelines.

This equipment was installed as part of the TMI Action Plan under Item 2.1.3a, and is required to be operational by 1/1/81.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981 (sections are identified below). Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

This plant is a PWR     , BWR X.  
The NSSS Vendor is Westinghouse (W)     , Babcox & Wilcox (B&W)     ,  
Combustion Engineering (CE)     , General Electric (GE) X.

With respect to this equipment item, it is noted (applicable section checked):

- The Licensee does not provide adequate information with respect to identification of TMI Action Plan equipment installed as of 1/1/81.
- The Licensee has not provided the correlation of this equipment item with the specific sections of NUREG-0737. [The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and the terminal blocks associated with the device also identified?]
- The Licensee has not provided the approximate installation date for the TMI Action Plan equipment items so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
- The Licensee has provided a standard Owners' Group position with respect to a NUREG-0737 technical area.
- The Licensee has requested extensions of implementation dates.
- X The Licensee has stated that this equipment item is associated with the following section of NUREG-0737. (This list of applicable NUREG-0737 sections has been identified by NRC as sections within the scope of this review):
  - II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment
  - X II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

Equipment Item No. 91 (TMI Action Plan Item)  
 Electrical Cable Located in the Drywell  
 Rockbestos Model RSS-6-104  
 Electrical Cable for Radiation Monitor  
 Licensee Reference 3247  
 Required Operating Time: Continuous  
 TER Checksheet No. 91  
 Licensee Submittal: Page IV-27 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable *new item*

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
  - Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
  - Corrective action specified by the Licensee:
    - Equipment replacement with qualified equipment
    - Equipment modification
    - Equipment relocation above submergence level
    - Relocate or shield equipment from radiation source
    - Verify qualification by additional (testing/analysis)
    - Equipment relocation to a mild environment
    - Qualification testing of equipment in progress
    - Other ( \_\_\_\_\_ )
  - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
  - The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action as soon as cable is available.)
  - The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| <u>I.b Modification</u>            | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review? \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

*See page 3a*





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

LICENSEE RESPONSE TO NRC SER

1. This new cable was installed during the 1980 refueling outage as part of New High Rad Detectors.
2. The Coax Connectors (P/N N-44079-02) and Raychem WCSF-N Tubing are qualified under the Conax IPS Reports.
3. Vendor has advised of an anomaly in temperature qualification which may affect this equipment. An investigation is presently in progress to determine applicability and effect on this.

Replace cable with a qualified equivalent. Replacement to be supplied by General Atomic and the Rockbestos Company as soon as it (cable) is available.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981 (sections are identified below). Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

This plant is a PWR     , BWR X.

The NSSS Vendor is Westinghouse (W)     , Babcox & Wilcox (B&W)     ,  
 Combustion Engineering (CE)     , General Electric (GE) X.

With respect to this equipment item, it is noted (applicable section checked):

- The Licensee does not provide adequate information with respect to identification of TMI Action Plan equipment installed as of 1/1/81.
- The Licensee has not provided the correlation of this equipment item with the specific sections of NUREG-0737. [The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and the terminal blocks associated with the device also identified?]
- The Licensee has not provided the approximate installation date for the TMI Action Plan equipment items so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
- The Licensee has provided a standard Owners' Group position with respect to a NUREG-0737 technical area.
- The Licensee has requested extensions of implementation dates.
- X The Licensee has stated that this equipment item is associated with the following section of NUREG-0737. (This list of applicable NUREG-0737 sections has been identified by NRC as sections within the scope of this review):
  - II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment
  - II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position

X *Hi Range Radiation Monitor*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

Equipment Item No. 92  
 Electrical Cable Located in the Drywell  
 Kerite FR/FR  
 Electrical Distribution  
 Licensee References 29, 819, and 820  
 Required Operating Time: Continuous  
 TER Checksheet No. 92  
 Reference 19, Section 4.5.2.7  
 Licensee Submittal: Pages IV-1, -3, -4, -5, -6, -8 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R) T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.

*Previously identified deficiencies were resolved by the licensee. See page -3a.*

*Review of Reference 29 confirms licensee statement.*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

LICENSEE RESPONSE TO NRC SER

These devices (cables) were subjected to test radiation values far in excess to the guideline requirements. The specific values are stated in Reference Q-16.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Response to TER concerns.

- A. The devices installed are identical in generic compounds to those tested by the manufacturer.
- B. Licensee has indicated that what is installed is what was tested by the manufacturer.
- C. These devices have been tested with Borated Water which is more severe than Demineralized Water.
- D. Licensee has confirmed with the cable manufacturer test applicability to specific insulation and jacket tested and installed.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life.

The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

Equipment Item No. 93  
 Electrical Cable Located in the Drywell  
 Kerite HTK/FR  
 Electrical Distribution  
 Licensee References 29, 819, and 820  
 Required Operating Time: Continuous  
 TER Checksheet No. 93  
 Reference 19, Section 4.5.2.7  
 Licensee Submittal: Page IV-2 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.

*The Licensee has resolved previously identified deficiencies - see p 3a  
 Review of Reference 29 confirms Licensee statements.*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

LICENSEE RESPONSE TO NRC SER

These devices (cables) were subjected to test radiation values far in excess to the guideline requirements. The specific values are stated in Reference Q-16.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Response to TER concerns.

- A. The devices installed are identical in generic compounds to those tested by the manufacturer.
- B. Licensee has indicated that what is installed is what was tested by the manufacturer.
- C. These devices have been tested with Borated Water which is more severe than Demineralized Water.
- D. Licensee has confirmed with the cable manufacturer test applicability to specific insulation and jacket tested and installed.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life.

The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

Equipment Item No. 94  
 Electrical Cable Located in the Drywell  
 General Electric Type SI-58073  
 Electrical Distribution  
 Licensee References 11, 1588, and 3621  
 Required Operating Time: Continuous  
 TER Checksheet No. 94  
 Reference 19, Section 4.b.7  
 Licensee Submittal: Page IV-11 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <b>I.a</b> Qualified               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

LICENSEE RESPONSE TO MRC SER

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity. Refer to Section B.5 of this report.



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FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

Checksheets 5a thru 5f have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

Equipment Item No. 95  
 Electrical Cable Located in the Steam Tunnel  
 General Electric Type SI-58073  
 Electrical Distribution  
 Licensee References 11 and 1588  
 Required Operating Time: Continuous  
 TER Checksheet No. 95  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-12 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

Equipment Item No. 96  
 Electrical Cable Located in the Reactor Building  
 General Electric Type SI-58073  
 Electrical Distribution  
 Licensee References 11 and 1588  
 Required Operating Time: Continuous  
 TER Checksheet No. 96  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-18 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

Equipment Item No. 97  
 Electrical Cable Located in the Turbine Building  
 General Electric Type SI-58073  
 Electrical Distribution  
 Licensee References 11 and 1588  
 Required Operating Time: Continuous  
 TER Checksheet No. 97  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-19 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A)S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other ( \_\_\_\_\_ )

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

Equipment Item No. 98  
 Electrical Cable Located in the Steam Tunnel  
 General Electric Type SI-58081  
 Electrical Distribution  
 Licensee Reference 14, 2694  
 Required Operating Time: Continuous  
 TER Checksheet No. 98  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-13 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

Equipment Item No. 99  
 Electrical Cable Located in the Reactor Building  
 General Electric Type SI-58081  
 Electrical Distribution  
 Licensee Reference 14, 2694  
 Required Operating Time: Continuous  
 TER Checksheet No. 99  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-22 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                                  | III.a Exempt                   |
| II.a Qualification Not Established                | III.b Not in Scope             |
| II.b Not Qualified                                | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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 1a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

Equipment Item No. 100  
 Electrical Cable Located in the Turbine Building  
 General Electric Type SI-58081  
 Electrical Distribution  
 Licensee Reference 14, 2694  
 Required Operating Time: Continuous  
 TER Checksheet No. 100  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-23 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q<sup>2</sup>, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ **X**
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



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NRC Contract No. NRC-03-79-118  
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FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

Equipment Item No. 101  
 Electrical Cable Located in the Drywell  
 General Electric Type SI-58110  
 Electrical Distribution  
 Licensee References 11, 1588, and 3622  
 Required Operating Time: Continuous  
 TER Checksheet No. 101  
 Reference 19, Section 4.6.7  
 Licensee Submittal: Pages IV-9a and -9b [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LD1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.

*The licensee provided the required  
 documents on radiation and aging  
 see P-3a*



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

LICENSEE RESPONSE TO NRC SER

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.

Containment Spray Impingement

The concerns of impingement due to chemical spray within the drywell are bounded by the qualification for 100% relative humidity. Refer to Section B.5 of this report.

Licensee considers these devices fully qualified.

Summary of new information on SCEW sheet.

- A) New tested radiation value.
- B) New qualified life.



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NRC Contract No. NRC-03-79-118  
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FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

Checksheets 5a thru 5e have been removed due to the  
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

Equipment Item No. 102  
 Electrical Cable Located in the Reactor Building  
 General Electric Type SI-58145  
 Electrical Distribution  
 Licensee References 11 and 1588  
 Required Operating Time: Continuous  
 TER Checksheet No. 102  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Pages IV-20 and IV-24 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103**

Equipment Item No. 103  
 Electrical Cable Located in the Turbine Building  
 General Electric Type SI-58145  
 Licensee References 11 and 1588  
 Required Operating Time: Continuous  
 TER Checksheet No. 103  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Pages IV-21 and -25 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u>               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

Equipment Item No. 104  
 Thermocouple Cable Located in the Reactor Building  
 General Electric, Copper/Constantan  
 Transmits Torus Temperature Signal  
 Licensee Reference 3621  
 Required Operating Time: Continuous  
 TER Checksheet No. 104  
 Reference 19, Section 4.3.3.2  
 Licensee Submittal: Page IV-10 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified, ~~and/or will function when exposed to the applicable DBE environmental service conditions.~~
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified               | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_ X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

Equipment Item No. 105  
 Electric Motor Located in the Turbine Building  
 General Electric Model 5K184AL217  
 Drives Standby Gas Treatment Exhaust Fans (HVE-5A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 105  
 Reference 19, Section 4.3.2.2  
 Licensee Submittal: Page VI-9 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has~~/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and ~~should~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_ X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

Equipment Item No. 106  
 Electric Motor Located in the Turbine Building  
 General Electric Model 5K831171A2  
 Drives Condensate Booster Pumps (M2-7A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 106  
 Reference 19, Section 4.6.10  
 Licensee Submittal: Page VI-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



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FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

LICENSEE RESPONSE TO NRC SER

Non-Harsh Environment - Mitigating Equipment

This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal.

The TER reference to the DITER is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

- Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)
- Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)
- Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

- Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.
- Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.
- Backup (equipment/system) is subject to a potentially disabling single active failure.
- Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.
- Failure of the primary equipment can result in erroneous indication which could mislead an operator.
- Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

Reason for Concurrence

Reason for Non-Concurrence

The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

Other (see page 4b)

Backup (equipment/system) is not safety-related.

Resultant NRC Qualification Evaluation Category (~~IIIa~~/IIIb)

This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

Note 1: The Licensee (~~has~~/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3a)

The rationale presented by the Licensee is not supported by objective technical evidence.

Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

Equipment Item No. 107  
 Electric Motor Located in the Turbine Building  
 General Electric Model 5K6339XC44A  
 Drives Condensate Pumps (M2-6A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 107  
 Reference 19, Section 4.6 10  
 Licensee Submittal: Page VI-1 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	4a, 4b, 4c, <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/nas not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/~~or~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 402

LICENSEE RESPONSE TO NRC SER

Non-Harsh Environment - Mitigating Equipment

This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal.

The TER reference to the DITER is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

Reason for Concurrence

The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page 4b)

Resultant NRC Qualification Evaluation Category (~~IIIa~~/IIIb)

Note 1: The Licensee (~~has~~/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3a)

Reason for Non-Concurrence

Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

Backup (equipment/system) is not safety-related.

This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

The rationale presented by the Licensee is not supported by objective technical evidence.

Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



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 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

Equipment Item No. 108  
 Electric Motor Located in the Turbine Building  
 General Electric Model 5K861186A1  
 Drives Reactor Feedwater Pumps (M2-10A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 108  
 Reference 19, Section 4.6.10  
 Licensee Submittal: Page VI-3 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	4a, 4b, 4c, 4d, <del>4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

*See pages 4a, b, c*



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it is not subjected to a harsh environment as a result of the postulated accident that operability credit is taken. NRC concerns regarding aging in mild environments are addressed in the transmittal letter and in Section B.6 of this submittal."

The TER reference to the DITER evaluation is not applicable. The equipment and/or harsh environment parameters contained in the October 31, 1980 submittal completely superseded the previous submittals. All equipment items exempted from qualification and removed from those previous submittals were so justified in the October 31, 1980 submittal.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

Reason for Non-Concurrence

— Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.

X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)

— Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.

— Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

— Backup (equipment/system) is subject to a potentially disabling single active failure.

— Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.

— Failure of the primary equipment can result in erroneous indication which could mislead an operator.

— Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

Reason for Concurrence

\_\_\_ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

Other (see page 4b)

Resultant NRC Qualification Evaluation Category (~~IIIb~~/IIIb)

\_\_\_ Note 1: The Licensee (has/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page     )

Reason for Non-Concurrence

\_\_\_ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

\_\_\_ Backup (equipment/system) is not safety-related.

\_\_\_ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

\_\_\_ The rationale presented by the Licensee is not supported by objective technical evidence.

\_\_\_ Other (see page     )

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

The concern regarding the qualification of the FWCI system involved the fact that the FWCI system is part of the emergency core cooling system with the specific function of providing core cooling for small piping breaks below the capabilities of the unassisted core spray and LPCI subsystems and to assist the ADS in depressurizing the reactor vessel to the point where core spray and LPCI can be injected into the core. The Licensee continues to maintain that the accident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building.





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LCB

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. It is agreed that this is probably the primary purpose of the safety function of this system. At the same time, however, a small piping break in the turbine building (steam or feedwater) can not be completely discounted.

The steam and feedwater drawings for Millstone 1 have been reviewed to determine if an unisolable small piping break outside containment is credible. No case was discovered where less than two isolation valves were provided such that a single active failure could create an unisolable leak. Consequently, it appears that for any HELB outside containment, isolation of the affected line immediately terminates the accident and therefore it is unlikely that FWCI operation would be required.

Conclusion

In view of the foregoing discussion, it is agreed that environmental qualification of these equipment items is not required because they are not subjected to a hostile environment by the accident that they are designed to mitigate.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

Equipment Item No. 109  
 Electric Motors Located in the Intake Structure  
 General Electric Model 5K6326XC317A  
 Drives Containment Spray Cooling Water Pumps (M4-13A, B, C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 109  
 Reference 19, Section 4.7.12  
 Licensee Submittal: Page VI-7 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable mild environment

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <b>III.b Not in Scope</b>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

Equipment Item No. 110  
 Electric Motor Located in the Intake Structure  
 General Electric Model 5K6338XC39A  
 Drives Service Water Pumps (M4-7C, D)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 110  
 Reference 19, Section 4.7.12  
 Licensee Submittal: Page VI-5 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable mild environment

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

Equipment Item No. 111  
 Electric Motor Located in the Reactor Building  
 General Electric Model 5K818F41A134  
 Drives Emergency Condensate Transfer Pump (M7-28)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 111  
 Reference 19, Section 4.5.2.9  
 Licensee Submittal: Page VI-4 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. III

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |   |                                |
|---|--------------------------------|
| I.a Qualified                             | II.c Qualified Life Deficiency |
| I.b Modification                          | III.a Exempt                   |
| <u>II.a Qualification Not Established</u> | III.b Not in Scope             |
| II.B NOT Qualified                        | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*See page 3a*



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

General Electric is under contract to provide tracability to existing test and analysis documentation by June 30, 1982.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

Equipment Item No. 112  
 Electric Motor Located in the Reactor Building  
 General Electric Model 5K6329XC3A  
 Drives Emergency Core Cooling and Containment Spray Pumps (M8-75A, B, C, D)  
 Licensee References 821 and 3616  
 Required Operating Time: Continuous  
 TER Checksheet No. 112  
 Reference 19, Section 4.5.2.9  
 Licensee Submittal: Page VI-6 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, <del>5b</del> , <del>5c</del> , 5d, <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , 6b
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other ( \_\_\_\_\_ )

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



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NRC Contract No. NRC-03-79-118  
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 413

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

Checksheets 5a, 5d and 5f have been removed due to the proprietary nature of information contained therein.





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 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

Equipment Item No. 113  
 Electric Motor Located in the Reactor Building  
 General Electric Model 5K6338XC28A  
 Drives Core Spray Cooling Pumps (1401A, B)  
 Licensee References 821 and 3616  
 Required Operating Time: Continuous  
 TER Checksheet No. 113  
 Reference 19, Section 4.5.2.9  
 Licensee Submittal: Page VI-8 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	5a, <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , 5f, <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |  |                                |
|--|--------------------------------|
| <input checked="" type="radio"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification                               | III.a Exempt                   |
| II.a Qualification Not Established             | III.b Not in Scope             |
| II.b Not Qualified                             | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

Qualified Aging for Life of Plant

Qualified life is greater than or equal to the plant design life. The surveillance and preventive maintenance program discussed in paragraph 5 will periodically verify the acceptability of the aging analysis.

Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

Checksheets 5a, 5d and 5f have been removed due to the proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

Equipment Item No. 114  
 Electric Motor Located in the Reactor Building  
 General Electric Model 5K447XAM206  
 Drives Shutdown Cooling Pumps (1002A, B; 1A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 114  
 Reference 19, Section 4.7.11  
 Licensee Submittal: Page VI-10 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

(R), T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

*(cold shutdown equipment)*





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

LICENSEE RESPONSE TO NRC SER

"The safety related function performed by this device would be accomplished by the system listed on the SCEW sheet which is or will be fully qualified (LPCI system). Use of the system listed ensures that a safe shutdown condition will be achieved, thereby obviating environmental qualification for this equipment. Refer to the description of systems which require environmental qualification, submittal by letter W. G. Council to D. M. Crutchfield, dated December 30, 1980, Attachment 2."



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

Equipment Item No. 115  
 Motor Control Center Located in the Turbine Building  
 General Electric Model HP171366  
 125-V dc Distribution (DC-1-1A, -11A, -3)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 115  
 Reference 19, Section 4.3.2.17  
 Licensee Submittal: Page XII-7 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in situ
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
(If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

Equipment Item No. 116  
 Motor Control Center Located in the Reactor Building  
 General Electric Model HP171366  
 125-V dc Distribution (11A-2)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 116  
 Reference 19, Section 4.3.2.17  
 Licensee Submittal: Page XII-6 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (nas/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and ~~is~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-052<sup>R</sup>. Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT





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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

Equipment Item No. 117  
 Motor Control Center Located in the Turbine Building  
 General Electric Model 7700  
 Emergency Power System (BUS 2-5, 2A-5, 2-6, 2-4, 2A-6, 2A-4)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 117  
 Reference 19, Section 4.7.10  
 Licensee Submittal: Page XII-4 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable mild environment

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

Equipment Item No. 118  
 Motor Control Center Located in the Diesel Room  
 General Electric Model 7700  
 Emergency Power System (480V-MCC-22A-1)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 118  
 Reference 19, Section 4.7.10  
 Licensee Submittal: Page XII-5 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable *mild environment*

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LL8**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

Equipment Item No. 119  
 Motor Control Center Located in the GTG Building  
 General Electric Model 7700  
 Emergency Power System (MCC-1)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 119  
 Reference 19, Section 4.7.10  
 Licensee Submittal: Page XII-10 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	<del>3a</del> , <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

Equipment Item No. 120  
 Motor Control Center Located in the Reactor Building  
 General Electric Model 7700  
 Emergency Power (MCC2-3, 2A-1, 2A-3, 2-3NE, 2A-3NE, 2-1)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 120  
 Reference 19, Section 4.5.2.24  
 Licensee Submittal: Page XII-3 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , 5g, <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | <u>III.a Exempt</u>            |
| II.a Qualification Not Established | III.b Not in Scope             |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_ X
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A Equipment Item description.

*see p-3a*



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

LICENSEE RESPONSE TO NRC SER

MCC's 2-1, 2A-1, 2-4, and 2A-4 are not required as they do not provide power to any mitigating equipment.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

Equipment Item No. 121  
 Transformer Located in the Turbine Building  
 General Electric, 1500/2000 kVA  
 4160/480 V Auxiliary Transformer  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 121  
 Reference 19, Section 4.3.2.1  
 Licensee Submittal: Page XIII-1 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>3e</del> , <del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |





**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121**

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

LICENSEE RESPONSE TO NRC SER

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

Equipment Item No. 122  
 Transformer Located in the Turbine Building  
 ITE, 1500/2000 kVA  
 4160/480 V Emergency Power Transformer  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 122  
 Reference 19, Section 4.3.2.5  
 Licensee Submittal: Page XIII-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

LICENSEE RESPONSE TO NRC SER

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



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NRC Contract No. NRC-03-79-118  
 FRC Project No. C5257  
 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

Equipment Item No. 123  
 Battery Charger Located in the Turbine Building  
 Fansteel Model 4039 Form A  
 DC Battery Charging (100(1), 101B(1A), 101C(11A))  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 123  
 Reference 19, Section 4.3.2.18  
 Licensee Submittal: Page XIV-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
✓ = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_ X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section E.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

Equipment Item No. 124  
 Motor-Generator Set Located in the Turbine Building  
 General Electric Model dc Motor 5C0405E603/  
 ac Motor 5K365AK2005V/Generator 5SJ4404A23Y56  
 Emergency Power Supply (VAC MG-1)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 124  
 Reference 19, Section 4.3.2.19  
 Licensee Submittal: Page XIV-5 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

Equipment Item No. 125  
 Diesel Generator Located in the Diesel Generator Room  
 Fairbanks Morse Model 38TD8 1/8 Turbocharged  
 4.16-kV Emergency Supply (No. 1)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 125  
 Reference 19, Section 4.3.2.20  
 Licensee Submittal: Page XIV-4 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, PPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
(If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X \_\_\_\_\_
- IV Documentation Not Made Available \_\_\_\_\_

This equipment item was previously evaluated in Reference 19. See page 1A  
Equipment Item description.

MILD ENVIRONMENT



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

LICENSEE RESPONSE TO NRC SER

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126**

Equipment Item No. 126  
 Electric Heater Located in the Turbine Building  
 Manufacturer and Model Number Not Stated  
 SBTG Heater (HVE-5A, B)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 126  
 Reference 19, Section 4.3.2.6  
 Licensee Submittal: Page IX-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , <del>5g</del> , <del>5h</del> , <del>5i</del> , <del>5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a</del> , <del>6b</del>
Maintenance and Replacement Schedule Summary	<del>7a</del> , <del>7b</del> , <del>7c</del>



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review \_\_\_\_\_ X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



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 FRC Assignment No. 13  
 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

Equipment Item No. 127  
 Electric Heater Controls Located in the Turbine Building  
 Johnson Service Model T-900 Thermostat  
 SGBT Heater Control (HVE-5A)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 127  
 Reference 19, Section 4.3.2.7  
 Licensee Submittal: Page IX-3 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/~~it~~ should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b</u> Not in Scope      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
 X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

Equipment Item No. 128  
 Switchgear Located in the Turbine Building  
 General Electric Model NP60844-B  
 Emergency Power (4.16-kV Bus Nos. 1, 3, 4, 5, 6, 7)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 128  
 Reference 19, Section 4.3.2.21  
 Licensee Submittal: Page XII-1 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b</del> , <del>3c</del> , <del>3d</del>
System Consideration Review	<del>4a</del> , <del>4b</del> , <del>4c</del> , <del>4d</del> , <del>4e</del> , <del>4f</del>
Equipment Environmental Qualification Review	<del>5a</del> , <del>5b</del> , <del>5c</del> , <del>5d</del> , <del>5e</del> , <del>5f</del> , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <u>III.b Not in Scope</u>      |
| II.b Not Qualified                 | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
 (If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
 or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
 Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

Equipment Item No. 129  
 Switchgear Located in the Turbine Building  
 General Electric Model ADK-5  
 480 V ac Distribution (480 V Bus 2A, 2)  
 Licensee reference not cited  
 Required Operating Time: Continuous  
 TER Checksheet No. 129  
 Reference 19, Section 4.3.2.15  
 Licensee Submittal: Page XII-2 [27]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:  
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,  
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, <del>3b, 3c, 3d</del>
System Consideration Review	<del>4a, 4b, 4c, 4d, 4e, 4f</del>
Equipment Environmental Qualification Review	<del>5a, 5b, 5c, 5d, 5e, 5f,</del> <del>5g, 5h, 5i, 5j</del>
Installed TMI Lessons Learned Implementation Equipment Summary	<del>6a, 6b</del>
Maintenance and Replacement Schedule Summary	<del>7a, 7b, 7c</del>



**EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129**

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/has not) provided a response to the SER concerns.
- The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
  - Equipment replacement with qualified equipment
  - Equipment modification
  - Equipment relocation above submergence level
  - Relocate or shield equipment from radiation source
  - Verify qualification by additional (testing/analysis)
  - Equipment relocation to a mild environment
  - Qualification testing of equipment in progress
  - Other ( \_\_\_\_\_ )
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action \_\_\_\_\_.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- |                                    |                                |
|------------------------------------|--------------------------------|
| I.a Qualified                      | II.c Qualified Life Deficiency |
| I.b Modification                   | III.a Exempt                   |
| II.a Qualification Not Established | <b>III.b Not in Scope</b>      |
| II.b Not Qualified                 | IV Documentation Not Available |





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:  
X = DEFICIENCY

- Documented Evidence of Qualification Adequate \_\_\_\_\_
- Adequate Similarity Between Equipment and Test Specimen Established \_\_\_\_\_
- Aging Degradation Evaluated Adequately \_\_\_\_\_
- Qualified Life or Replacement Schedule Established (If Required) \_\_\_\_\_
- Program Established to Identify Aging Degradation \_\_\_\_\_
- Criteria Regarding Aging Simulation Satisfied (If Required) \_\_\_\_\_
- Criteria Regarding Temperature/Pressure Exposure:
  - o Peak Temperature Adequate \_\_\_\_\_
  - o Peak Pressure Adequate \_\_\_\_\_
  - o Duration Adequate \_\_\_\_\_
  - o Required Profile Enveloped Adequately \_\_\_\_\_
  - o Steam Exposure (If Required) Adequate \_\_\_\_\_
- Criteria Regarding Spray Satisfied \_\_\_\_\_
- Criteria Regarding Submergence Satisfied \_\_\_\_\_
- Criteria Regarding Radiation Satisfied \_\_\_\_\_
- Criteria Regarding Test Sequence Satisfied \_\_\_\_\_
- Criteria Regarding Test Failures or Severe Anomalies  
(If Any) Satisfied \_\_\_\_\_
- Criteria Regarding Functional Testing Satisfied \_\_\_\_\_
- Criteria Regarding Instrument Accuracy Satisfied \_\_\_\_\_
- Test Duration Margin (1 hour + Function Time) Satisfied \_\_\_\_\_
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) \_\_\_\_\_

NRC QUALIFICATION CATEGORY

DESIGNATION:  
X = CATEGORY

- I.a Equipment Qualified \_\_\_\_\_
- I.b Equipment Qualification Pending Modification \_\_\_\_\_
- II.a Equipment Qualification Not Established \_\_\_\_\_
- II.b Equipment Not Qualified \_\_\_\_\_
- II.c Equipment Satisfies All Requirements Except Qualified Life  
or Replacement Schedule Justified \_\_\_\_\_
- III.a Equipment Exempt From Qualification \_\_\_\_\_
- III.b Equipment Not in the Scope of the Qualification Review X
- IV Documentation Not Made Available \_\_\_\_\_

MILD ENVIRONMENT

This equipment item was previously evaluated in Reference 19. See page 1A  
Equipment Item description.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

This equipment is exempt from qualification because it has been protected from a harsh environment as described in Section E of this report and is categorized as equipment located in a mild environment. Aging in mild environments is addressed in the transmittal letter and Section B.6 of this report.

## 5. CONCLUSIONS

The tabulations in Section 4.2 represent a summary of the results of the equipment environmental qualification (EEQ) assessment conducted in accordance with the methodology presented in Section 3. The evaluations are based on the available qualification documentation provided by the Licensee, complemented in several cases by other relevant technical information. The major qualification deficiencies that have been identified and the results of the evaluation are shown in the Equipment Environmental Qualification Summary Forms (Tables 4-1, 4-2, 4-3, and 4-4).

Although Sections 4.3, 4.4, and Appendix C of this report present a detailed evaluation of (1) the Licensee's qualification methodology, (2) the equipment environmental qualification of each equipment item, and (3) the Licensee's response to the NRC SER, it is appropriate to highlight for the Licensee and the NRC certain conclusions and concerns reached as a result of the review which require special attention. These concerns are summarized below.

Section 4.3.2 of this report addresses design concerns regarding the Licensee's HVAC equipment and enclosures which protect safety-related electrical equipment from the harsh environments resulting from a design basis accident. The Licensee should provide detailed design information to the NRC which ensures that (1) the enclosures described in Reference 22 provide sufficient shielding to preclude a harsh radiation environment and (2) the HVAC equipment that maintains environmental control is either located in a non-harsh environment or qualified for the environment to which it is exposed under accident conditions.

## 6. REFERENCES

The references listed in this section of the report were used to develop the Equipment Environmental Qualification evaluation for this plant. The references have been separated into two lists: (1) Plant-Specific References and (2) Plant Generic References. All non-generic documents are listed on the "Plant-Specific References" list. All qualification documents that could be applicable to equipment installed in several plants were listed on the "Plant Generic References" list. These documents include topical reports, test reports, component and material analyses, etc. cited by the Licensee as evidence of qualification in accordance with the documentation reference instructions established by IE Bulletin 79-01B. Since these documents were compiled by a computer data base, the citation numbering was computer generated and the same document has the same generic reference number in all Technical Evaluation Reports prepared under this equipment qualification program.

Throughout the text of the report, references are designated by a bracketed number; the reference numbers are not presented in sequential order.

## PLANT-SPECIFIC REFERENCES

1. W. G. Council  
Letter to D. M. Crutchfield, NRC. Subject: Environmental Qualification of Electrical Equipment, with attachments  
Northeast Nuclear Energy, 02-Jun-80
2. W. G. Council  
Letter to D. M. Crutchfield, NRC. Subject: Environmental Qualification of Electrical Equipment, with System Component Evaluation Worksheets Attached  
Northeast Nuclear Energy, 07-Jul-80  
B10029
3. R. W. Straub  
Letter to G. Black, GE. Subject: Emergency Core Cooling System Corner Room Heatup Test  
General Electric, 02-May-70  
MS-2320
4. N. R. Anderson  
Letter to D. L. Ziemann, NRC. Subject: Report of Visit to Millstone Unit 1 by NRC Personnel  
USNRC, 10-Feb-78
5. E. J. Brunner  
Letter to J. H. Sriezek, NRC. Subject: Follow-up on IE Circular 78-08 and TI 2515/13 at Region I SEP Facilities, with Millstone Site Inspection Reports  
USNRC, 28-Aug-78
6. W. G. Council  
Letter to D. M. Crutchfield, NRC. Subject: Containment Environmental Conditions, with Attachments  
Northeast Nuclear Energy, 01-May-80
7. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Environmental Qualification of Electrical Equipment; with Attachment  
Northeast Nuclear Energy Co., 09-Oct-80  
A01165
8. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear Power Station, Unit No. 1, Environmental Qualification of Electrical Equipment  
Northeast Utilities, 31-Oct-80  
A01204

9. Qualification Information Letter  
Subject: Definition of Valve Operability in Test Reports  
Limitorque, 09-Oct-80  
Proprietary
10. R. F. Thibault  
Letter to W. C. Mission, Northeast Utilities. Subject:  
Electrical Penetrations; Letters to NRC dated Nov. 30, 1977,  
and Dec. 2, 1977.  
General Electric, 31-Mar-78  
G-EH-8-37
11. Specifications: Type SI Cable, with Ebasco  
Purchase Order No. NY-481104 for Cable Type PE/PVC  
and Vulkene  
General Electric
12. S. S. Nelmes  
Letter to L. Davison, NUSCO. Subject: Supplemental  
Cable Qualification Data  
Kerite Co., 27-Oct-80  
Proprietary
13. T. Maddox  
Letter to Northeast Utilities. Subject: Model No.  
15-527 Solenoid Valve  
Atkomatic, 08-Aug-78  
Proprietary
14. R. Luther  
Memo to L. D. Davison, NUSCO. Subject: GE Flamenol Control  
Cable  
Northeast Utilities, 28-Oct-80
15. G. Lainas  
Letter to A. Schwencer, NRC. Subject: Electrical  
Equipment Environmental Qualification  
USNRC, 19-Feb-80
16. N. C. Moseley  
Letter to B. H. Grier, et al., NRC. Subject: Supplement  
No. 2 to Bulletin 79-01B, Environmental Qualification of  
Class 1E Equipment  
USNRC, 29-Sep-80
17. N. C. Moseley  
Letter to B. H. Grier, et al., NRC. Subject: Supplement  
No. 3 to Bulletin 79-01B, Environmental Qualification  
of Class 1E Equipment  
USNRC, 24-Oct-80

18. S. J. Chilk  
Memorandum and Order Pursuant to Union of Concerned  
Scientists Petition for Emergency and Remedial Relief  
USNRC, 23-May-80  
CLI-80-21
19. Technical Evaluation Report: Equipment Environmental  
Qualification; Northeast Nuclear Energy Company,  
Millstone Point No. 1 Plant  
FRC, 30-Apr-81  
TER-C5257-204, Proprietary
20. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Environmental  
Qualification of Safety-Related Electrical Equipment  
Northeast Utilities, 30-Jan-81
21. Office of Nuclear Reactor Regulation  
Safety Evaluation Report for Millstone Nuclear Power Station  
Unit No. 1; Environmental Qualification of Safety-Related  
Electrical Equipment  
USNRC, 10-Jun-81
22. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear  
Power Station Unit No. 1 - Environmental Qualification of  
Electrical Equipment  
Northeast Utilities, 14-Sep-81  
A01776
23. W. G. Council  
Letter to D. M. Crutchfield and R. A. Clark, NRC. Subject:  
Haddam Neck Plant, Millstone Nuclear Power Station Unit Nos.  
1 & 2; Response to Requests for Additional Information  
Northeast Utilities, 09-Feb-82  
A02213, A02226
24. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Implementation of  
NUREG-0737, Post-TMI Requirements - Haddam Neck Plant, Mill-  
stone Nuclear Power Station Units 1 & 2, with Attachment  
Northeast Utilities, 31-Dec-80  
A01379
25. R. F. Thibault  
Letter to R. Kacich, Northeast Utilities. Subject:  
Qualification of Vertical 4000V Induction Motors at  
Millstone  
General Electric, 30-Nov-79  
G-EH-9-155

26. Instructions: Tri Clad Vertical Induction Motors; High Thrus Hollow and Solid Shaft, P Base Frames 444-449, 6284-6289, 6314-6349 Open Enclosures  
General Electric  
GEH-3292C
27. R. M. Kacich  
Letter to C. J. Crane, FRC. Subject: Millstone 1 System Component Evaluation Work Sheets and Qualification References; with letter NEE-80-L-345 dated August 5, 1980  
Northeast Utilities, 23-Jul-80
28. BWR Equipment Qualification Summary Report  
16-Sep-80  
QSR-040-A-01, Proprietary
29. Job Orders for Equipment Changes, with Material Inspection Reports  
Northeast Nuclear Energy  
MP-1
30. A. J. Szukiewicz  
Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment; Including Staff Responses to Public Comments  
USNRC, 00-Jul-81  
NUREG-0588, Rev. 1
31. Clarification of TMI Action Plan Requirements  
USNRC, 00-Nov-80  
NUREG-0737
32. W. G. Council  
Letter to H. R. Denton, NRC. Subject: Haddam Neck Plant, Millstone Nuclear Power Station, Unit Nos. 1 and 2; TMI-2 Short-Term Lessons-Learned Implementation, with Attachments  
Northeast Utilities, 31-Dec-79
33. Environmental Qualification of Electrical Equipment  
USNRC, 14-Jan-80  
IEB 79-01B
34. Environmental Qualification of Class 1E Equipment  
USNRC, 29-Feb-80  
IEB 79-01B, Supp. 1



35. Request for Additional Information: Equipment Environmental Qualification (EEQ); Review of Licensees' Resolution of Outstanding Issues from NRC Equipment Environmental Qualification Safety Evaluation Reports (SER) and TMI Action Plan Installed Equipment; Northeast Nuclear Energy Company, Millstone Unit 1  
FRC, 04-Nov-81
36. Request for Additional Information: Equipment Environmental Qualification (EEQ); Review of Licensees' Resolution of Outstanding Issues from NRC Equipment Environmental Qualification Safety Evaluation Reports (SER) and TMI Action Plan Installed Equipment; Northeast Nuclear Energy Company, Millstone Unit 1; Revision 1  
FRC, 22-Feb-82
37. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear Power Station Unit Nos. 1 and 2; NUREG-0737 Item II.F.1.3, Containment High Range Radiation Monitor  
Northeast Utilities, 20-Oct-81  
A01379
38. W. G. Council  
Letter to D. L. Ziemann, NRC. Subject: Millstone Unit 1  
Emergency Operating Procedures  
Northeast Nuclear Energy Co., 11-Mar-80
39. D. C. Switzer  
Letter to V. Stello, Jr., NRC. Subject: Millstone Nuclear Power Station, Unit No. 1; Environmental Qualification of Safety-Related Electrical Equipment; with Attachment  
Northeast Nuclear Energy Co., 06-Mar-78
40. Draft Interim Technical Evaluation Report: Equipment Environmental Qualification; Northeast Nuclear Energy Company, Millstone Point No. 1 Plant  
FRC, 23-Sep-80  
DITER-C5257/204, Proprietary
41. D. G. Eisenhut  
Letter to All Power Reactor Licensees, Applicants, Vendors  
Subject: Environmental Qualification of Safety-Related Electrical Equipment; NRC Staff Positions  
USNRC, 20-Apr-82  
Generic Letter 82-09
42. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear Power Station, Unit No. 1; Environmental Qualification of Electrical Equipment; with Attachment  
Northeast Utilities, 28-Apr-82  
B10497

## PLANT GENERIC REFERENCES

649. Qualification Tests of Solenoid Valves by Environmental Exposure to Elevated Temperature, Radiation, Wear Aging, Seismic Simulation, Vibration Endurance, Accident Radiation ...  
Isomedix Inc., 00-Jul-79  
AQS21678/TR, Rev. A, Proprietary
662. T. Hess, Jr.  
Qualification Type Test Report: Limitorque Valve Actuators for Class 1E Service Outside Primary Containment in Nuclear Power Station Service  
Limitorque Corp., 28-May-76  
B0003
718. G. C. Gambs and D. V. Paulson  
Qualification Tests of Terminal Blocks in a Simulated Loss-of-Coolant Accident Environment; Phases 1 and 2  
FIRL, 00-Jan-79  
F-C4911-1
806. K. L. Douglas  
Test Report: Qualification of Air Valves Tested in a 340 Degree Steam Environment  
Rockwell Mfg. Co., 01-Dec-70  
2792-03-02, Rev. 1, Proprietary
807. Test Report: Target Rock Solenoid Valve, with letter of transmittal from GE  
General Electric, 20-Feb-79  
Proprietary
809. J. J. Patsey and E. L. Solem  
Qualification of NAMCO Controls Limit Switch Model EA-740 to IEEE Standards 344(1975), 323(1974), and 382(1972)  
Revision 1  
Acme-Cleveland Dev. Co., 22-Feb-79

811. R. M. Schuster  
Qualification Test for F01 Electrical Penetration Assembly  
General Electric, 30-Apr-71  
Proprietary
812. Prototype Testing Qualification Report  
General Electric, 16-Mar-70  
EPAQ, Proprietary
814. BWR Equipment Qualification Summary, with GE Letter  
No. G-EA1-8-11, Electrical Terminal Block Testing  
General Electric, 08-Oct-80  
QSR-080-A-01, Proprietary
815. L. E. Witcher and D. V. Paulson  
Tests of Raychem Thermofit Insulation Systems Under  
Simultaneous Exposure to Heat, Gamma Radiation, Steam,  
and Chemical Spray While Electrically Energized  
FIRL, 00-Jan-75  
F-C4033-3
816. W. C. Federick  
Qualification Report for Conductor Modules for Arkansas  
Nuclear One Unit 2  
Conax Corp., 21-May-79  
IPS-409, Rev. A, Proprietary
819. L. E. Witcher and D. V. Paulson  
Tests of Electrical Cables under Simultaneous Exposure to  
Gamma Radiation, Steam, and Chemical Spray While  
Electrically Energized  
FIRL, 00-Mar-75  
F-C4020-2
820. L. E. Witcher and D. V. Paulson  
Tests of Electrical Cables under Simultaneous Exposure  
to Gamma Radiation, Steam, and Chemical Spray While  
Electrically Energized  
FIRL, 00-Mar-75  
F-C4020-1

821. M. W. Sheets  
Topical Report of General Electric Vertical  
Induction Motors for Class 1E Environmental Qualification  
for Millstone Unit 1  
General Electric, 15-Sep-79  
491HA751, Proprietary
824. J. M. Olszewski  
Qualification of Fenwal 17023-6 Units to  
General Electric Drawing No. 145C3004  
Fenwal Inc., 04-May-71  
6350, Proprietary
827. W. W. Holbrook and D. F. Hatmaker  
Qualification Test for Electrical Connectors Used at Browns  
Ferry Nuclear Power Plant Units 1, 2, and 3  
Wyle Labs, 23-Mar-78  
43854-1, Proprietary
828. Seismic and Irradiation Testing of One 300-PSIG  
Transmitter... and One 200-inch W.C. DP Transmitter...  
for Gould, Inc.  
Wyle Labs, 05-May-80  
58477, Rev. A.
839. C. R. Oak  
Containment Environmental Testing: Dresser Electromatic  
Relief Valve Actuator; Limitorque Valve Control; ASCO  
Solenoid Control Valve; Target Rock Relief Valve  
General Electric Co., 17-Dec-68  
PEP No. 42963, Proprietary
905. F. E. Hancock  
Final Report on the Evaluation of the Qualification of Set  
Screw Connectors  
Wyle Labs, 08-Oct-80  
17436-1, Proprietary
1417. S. P. Carfagno and R. J. Gibson  
A Review of Equipment Aging Theory and Technology  
EPRI, 00-Sep-80  
NP-1558

1588. E. R. Campbell  
Qualification Test Report on Four Cable Splice  
Assemblies (Long-Term) for Northern States  
Power Co., Monticello, Minn.  
Wyle Labs, 15-Sep-78  
44114-2
1722. R. W. Prout  
Qualification of Firewall III Coaxial Constructions for  
Class 1E Service in Nuclear Generating Stations.  
Revisor 1  
Rockbestos Co., 15-Mar-79
1792. Qualification Test Data (Fenwal Temperature Switch)  
General Electric, 28-Feb-77  
DV145C3004, Proprietary
2178. W. C. Federick  
Qualification Report for Conductor Modules for Arkansas  
Nuclear One Unit 2  
Conax Corp., 09-Mar-79  
IPS-409
2694. R. B. Blodgett and R. G. Fisher  
Insulations and Jackets for Control and Power Cables in  
Thermal Reactor Nuclear Generating Stations  
IEEE Transactions, 00-May-69  
Vol. PAS-88, No. 5
2840. C. H. Freese and B. Asamoto  
Test Report: Class 1E Design Qualification Testing of  
Analog High Range Radiation Monitor (RD-23, RP-2C, RP-23 and  
RP-20-01)  
General Atomic, 15-Dec-80  
E-254-960
2841. LOCA Qualification Procedure for RD-23/RP-2C/RP-23 High  
Range Radiation Monitor System  
General Atomic, 01-May-80  
0360-2082

2842. J. J. Anderson, P. Knoll, and R. C. Myrick  
Seismic Testing of RD23, RP2C, and RP23 Assemblies for  
General Atomic Company  
Wyle Labs, 30-Oct-80  
58567
2843. B. Asamoto  
Qualification Test Procedure for RP-2C/RD-23/RP-23 High  
Range Radiation Monitor System  
General Atomic, 15-May-80  
0360-2080
2844. Qualification and Aging Plan for General Atomic's Class 1E  
Equipment  
General Atomic, 00-Mar-78  
E-115-699 (Rev.), Proprietary
2845. C. V. Hajek  
Palo Verde I Test Report  
Raychem Corp., 04-Mar-80  
EDR 5019
2846. Aging Procedure for Miscellaneous Class 1E Components  
General Atomic, 11-Jan-79  
ELA 354-9002
2848. J. J. Anderson, W. Franz, and R. C. Myrick  
Loss of Coolant Accident (LOCA) Test on One Radiation  
Detector Probe Assembly Model RD-23 for General Atomic Co.  
Wyle Labs, 10-Oct-80  
58522
3247. G. S. Buettner and K. J. Giannotti  
Qualification of Firewall III Coaxial Constructions for  
Class 1E Service in Nuclear Generating Stations  
Rockbestos Co., 18-Jan-78
3445. Test Procedure for Aging Aluminum Electrolytic Capacitors  
General Atomic, 15-Jan-79  
ELA 351-9007, RvA

3446. Seismic Test Procedure for RD-23/RP-2C/RP-23 High Range  
Radiation Monitor System  
General Atomic, 26-Jun-80  
0360-2083
3447. Electronic Systems Standard: High Temperature Burn-in Test  
General Atomic, 21-Mar-77  
ATP-106 C
3612. R. F. Thibault  
Letter to G. Tsouderos, Vermont Yankee. Subject: Electrical  
Penetration Qualification Test Report  
General Electric, 14-Aug-78  
G-HB-8-74, Proprietary
3616. M. W. Sheets  
Radiation Effects  
General Electric, 01-Oct-80  
491HA751, Add. A
3617. M. S. Cook  
Design Qualification Test Report (Abridged) for Conax RTD  
and Thermocouple Assemblies  
Conax Corp., 24-Nov-80  
IPS-618, Proprietary
3618. J. B. Drab  
BWR Qualification Report: Containment Chamber Service  
Limitorque Corp., 23-Jan-79  
600376A, Add. A, Rev. B, Proprietary
3619. R. L. Smith and F. E. Hancock  
Final Report on the Evaluation of the Qualification of  
Terminal Block, Model EB-25 (General Electric Company)  
Wyle Labs, 01-Dec-80  
17436-15, Proprietary
3620. R. L. Smith and C. W. Warren  
Final Report on the Evaluation of the Qualification of  
Ring-Tongue Connectors  
Wyle Labs, 01-Dec-80  
17436-18, Proprietary



3621. R. L. Smith and C. W. Warren  
Final Report on the Evaluation of the Qualification of SI  
58073 Vulkene Cables (General Electric Company)  
Wyle Labs, 25-Nov-80  
17436-19, Proprietary
3622. R. L. Smith and C. W. Warren  
Final Report on the Evaluation of the Qualification of SI  
58110 Vulkene Cables (General Electric Company)  
Wyle Labs, 25-Nov-80  
17436-20, Proprietary
3623. J. F. Gleason and R. A. Bennett  
Final Report on the Evaluation of the Qualification of  
Solenoid Valve, Model 13-527 Atkomatic Valve Co., Inc.  
Wyle Labs, 10-Feb-81  
17436-21, Proprietary
3624. J. F. Gleason and R. L. Smith  
Final Report on the Evaluation of the Qualification of  
Burndy Connectors  
Wyle Labs, 30-Jan-81  
17436-22, Proprietary
3625. J. F. Gleason and C. Warren  
Final Report on the Evaluation of the Qualification of ASCO  
Solenoid Valve Model No. HT8320A189  
Wyle Labs, 06-Feb-81  
17436-23, Proprietary
3626. J. F. Gleason and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Co. Valves Model Nos. 8302C27RF and  
8300B61R  
Wyle Labs, 18-Feb-81  
17436-28, Proprietary
3627. J. F. Gleason and L. Moy  
Final Report on the Evaluation of the Qualification of  
Target Rock Model 1/2 SMS-A-01 Automatic Depressurization  
System (ADS) Solenoid Valve  
Wyle Labs, 12-Jan-81  
17436-31, Proprietary



3628. J. F. Gleason and L. Moy  
Final Report on the Evaluation of the Qualification of ASCO  
LBX8320 Solenoid Valve  
Wyle Labs, 13-Jan-81  
17436-32, Proprietary
3629. J. F. Gleason and L. Moy  
Final Report on the Evaluation of the Qualification of  
Limatorque Model SMA Motor Operator  
Wyle Labs, 23-Jan-81  
17436-35, Proprietary
3630. J. F. Gleason and L. Moy  
Final Report on the Evaluation of the Qualification of  
Limatorque Model No. SMB-00 Valve Operator  
Wyle Labs, 02-Feb-81  
17436-36, Proprietary
3631. J. F. Gleason and R. A. Bennett  
Final Report on the Evaluation of the Qualification of Flow  
Switches, Power Engineering & Equipment Compound Models  
NT-357 & NT-358  
Wyle Labs, 10-Apr-81  
17436-39, Proprietary
3632. J. F. Gleason and C. Warren  
Final Report on the Evaluation of the Qualification of  
Terminal Block Model CR151B (General Electric Company)  
Wyle Labs, 03-Feb-81  
17436-48, Proprietary
3633. J. F. Gleason and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Atmospheric Control System Solenoid Valve (Automatic Switch  
Company) Model No. HB8302C27F  
Wyle Labs, 03-Mar-81  
17436-65, Proprietary
3634. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Co. Valve Model No. LB831615  
Wyle Labs, 11-Mar-81  
17436-68, Proprietary

3635. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Co. Valve Model No. HVA90405-2A  
Wyle Labs, 12-Mar-81  
17436-69, Proprietary
3636. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Company Valve Model No. 831430  
Wyle Labs, 23-Mar-81  
17436-74, Proprietary
3637. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Company Valve Model No. LB831615  
Wyle Labs, 24-Mar-81  
17436-75, Proprietary
3638. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Company Valve Model No. LB831615  
Wyle Labs, 24-Mar-81  
17436-76, Proprietary
3639. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Company Valve Model No. WPLB8300B58RU  
Wyle Labs, 25-Mar-81  
17436-77, Proprietary
3640. R. L. Smith and M. S. Noble  
Final Report on the Evaluation of the Qualification of  
Automatic Switch Company Valve Model No. 8302C27RF  
Wyle Labs, 07-Apr-81  
17436-78, Proprietary

## APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

The Licensee has provided information concerning environmental service conditions in various locations within the plant. Specific locations are shown on Figures A-1, A-2, and A-3. Based on these considerations, each equipment item was evaluated with respect to the environmental service conditions presented in this appendix.

Environment 1 - Inside Reactor Containment DrywellNormal Operation

Temperature	120°-170°F* (135°F Nominal+)
Pressure	15.7 psia*
Humidity	89°F dew point*
Radiation	Table A-1*

Accident Conditions

The DOR Guidelines state that, for plants equipped with automatic containment spray systems not subject to single component failure or delayed initiation, equipment qualified for the loss-of-coolant accident (LOCA) environment is also considered qualified for the postulated main steam line break (MSLB) accident. The design of Millstone Point Unit 1 does not satisfy this criterion. The Millstone Unit 1 containment spray system is manually initiated and is not safety-related.

\*Reference 8.  
+FSAR.

In Reference 22, the Licensee states that the environmental service conditions for temperature and pressure inside containment used on revised SCEW sheets are based on the peak temperature resulting from a MSLB (Figure A-4) and the peak pressure resulting from a LOCA (Figure A-5). In Reference 42, the Licensee states that some concern has been raised regarding the methodology employed to obtain the temperature profile shown in Figure A-4. The Licensee states that a revised profile has been developed based on a temperature 20°F higher than the saturation temperature associated with the peak drywell pressure for any design basis accident. The revised profile provided in Reference 42 is reproduced in this report as Figure A-22.

Temperature	310°F, Figure A-22
Pressure	43 psig, Figure A-5
Radiation	Table A-1
Humidity	100%
Flooded Level	1'8" Elev. in drywell*
Spray	Demineralized water*

### Environment 2 - Reactor Building

#### Normal Operation

##### 14'6" Elevation

Temperature	104°F**
Pressure	-0.1 to -0.25 in H <sub>2</sub> O+
Humidity	Not specified
Radiation	Table A-1

##### 42'6" Elevation

Temperature	104°F**
Pressure	-0.1 to -0.25 in H <sub>2</sub> O+
Humidity	Not specified
Radiation	Table A-1

\*Reference 8.

\*\*8-5-80 Northeast Utilities Letter NEE-80-L-345.

+FSAR.

65'9" Elevation

Temperature	104°F**
Pressure	-0.1 to -0.25 in H <sub>2</sub> O+
Humidity	Not specified
Radiation	Table A-1

Corner Rooms

Temperature	90°F++/104°F**
Pressure	Not specified
Humidity	Not specified
Radiation	Table A-1

Accident Conditions14'6" Elevation (MSLB)

Temperature	Figure A-7
Pressure	Figure A-8
Humidity	100% (assumed)
Radiation	Table A-1
Flooded Level	Not specified

42'6" Elevation (ICWLB)

Temperature	Figure A-9
Pressure	Figure A-10
Humidity	Figure A-20
Radiation	Table A-1
Flooded Level	Not specified

65'9" Elevation (ICSLB)

Temperature	Figure A-11
Pressure	Figure A-12
Humidity	Not specified
Radiation	Table A-1
Flooded Level	Not specified

+FSAR.

++GE Letter MS-2320 dated 5/2/70 concerning site test for ECCS corner room heat-up.

\*\*8-5-80 Northeast Utilities Letter NEE-80-L-345.

Corner Rooms

Temperature	202°F
Pressure	14.75 psia
Humidity	100%
Radiation	Table A-1
Flooded Level	Not specified

Environment 3 - Steam TunnelNormal OperationOpen Areas

Temperature	120°F
Pressure	Not specified
Humidity	Not specified
Radiation	Table A-1

Accident Conditions (MSLB)

Temperature	Figure A-17
Pressure	Figure A-18
Humidity	Figure A-19
Radiation	Table A-1
Flooded Level	Not specified

Environment 4 - Turbine BuildingNormal Operation

Temperature	105°F Condensate Pump Area** 120°F Feedpump Area
Pressure	-0.1 inches H <sub>2</sub> O+
Humidity	Not specified
Radiation	Table A-1

Accident Conditions

Temperature	Condenser Bay: Figure A-13 Switchgear Area: Figure A-15
Pressure	Condenser Bay: Figure A-14 Switchgear Area: Figure A-16
Humidity	100% RH (assumed)
Radiation	Table A-1
Flooded Level	Not specified

\*\*8-5-80 Northeast Utilities Letter NEE-80-L-345.

+FSAR.

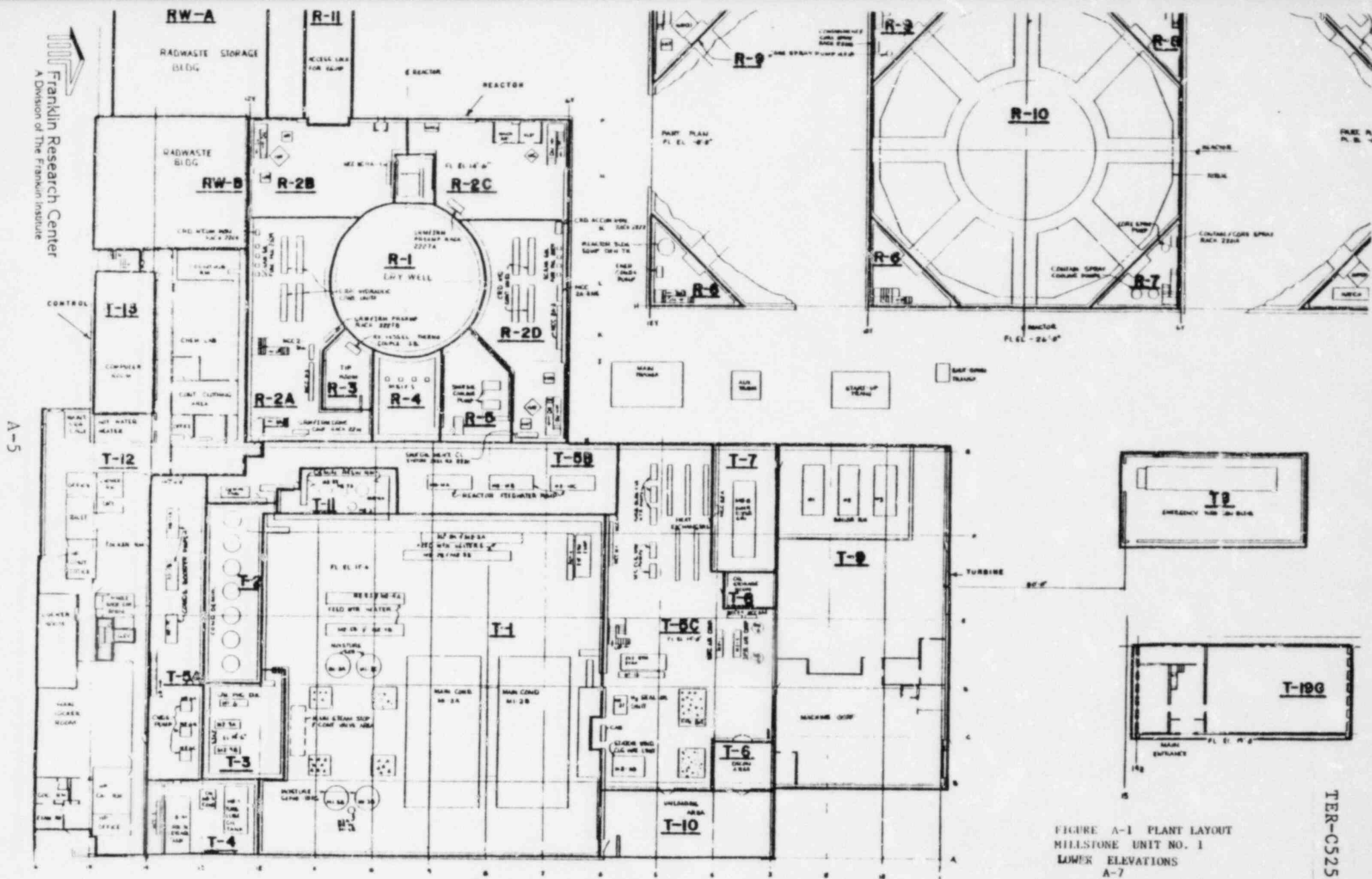


Figure A-1. Millstone Point Unit 1 Plant Layout, Lower Elevations [8]

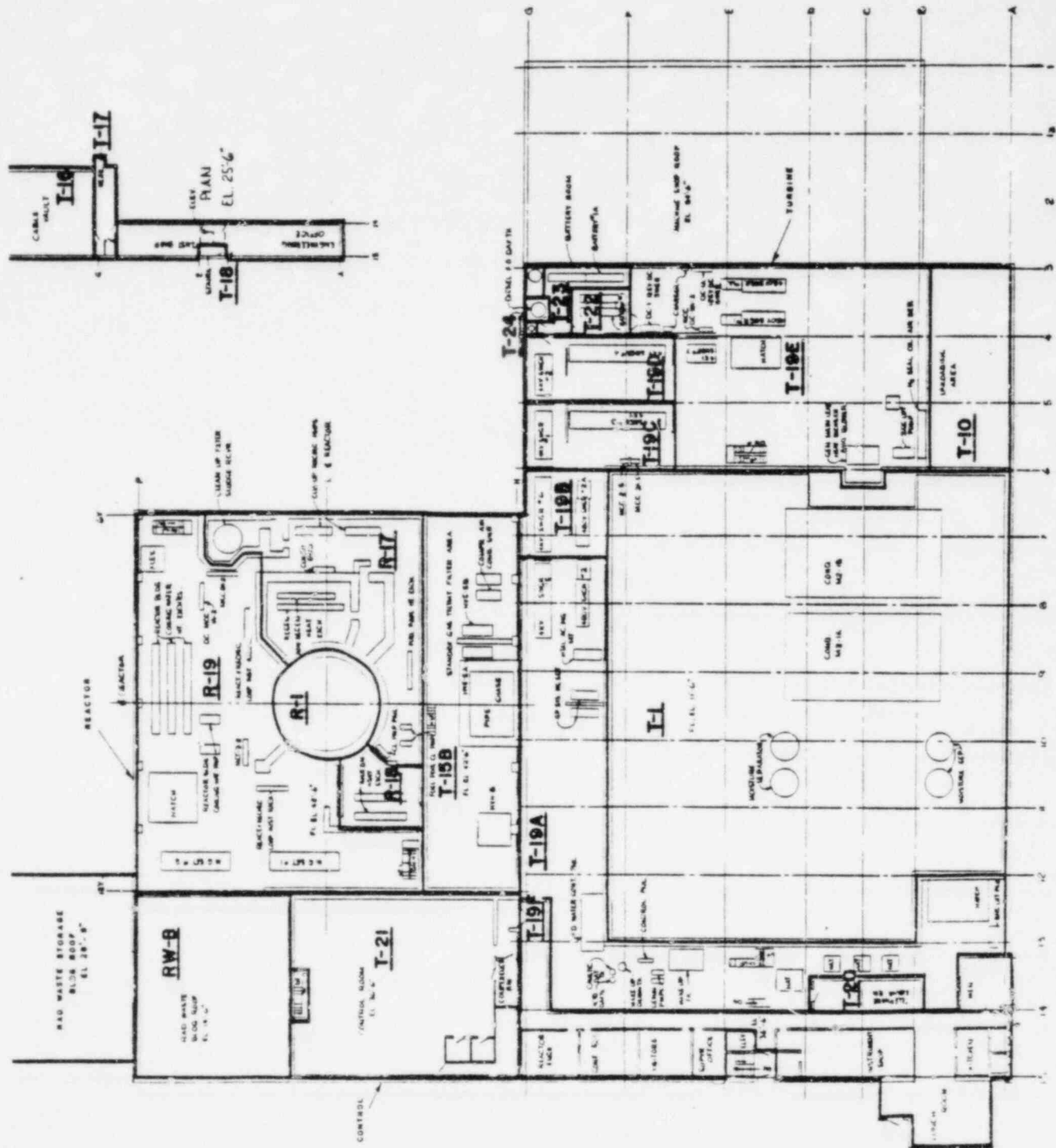
FIGURE A-1 PLANT LAYOUT  
MILLSTONE UNIT NO. 1  
LOWER ELEVATIONS  
A-7

**FIGURE SUPPLIED  
BY THE LICENSEE**

TER-C5257-459

FIGURE A-2  
PLANT LAYOUT  
MILLSTONE UNIT #1  
MIDDLE ELEVATION  
A-B

FIGURE SUPPLIED  
BY THE LICENSEE





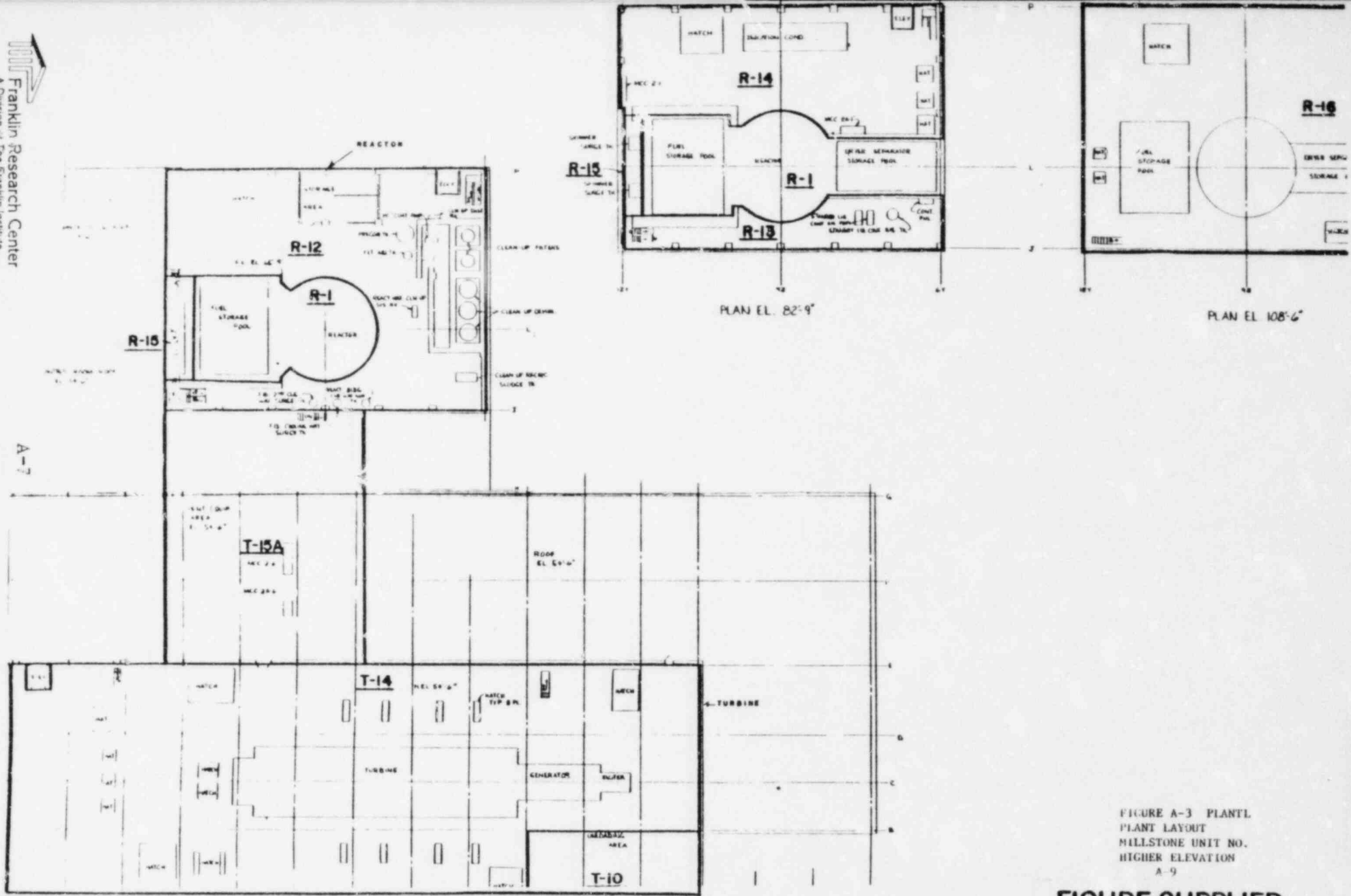


Figure A-3. Millstone Point Unit 1 Plant Layout, Higher Elevation [FSAR]

**FIGURE SUPPLIED  
BY THE LICENSEE**

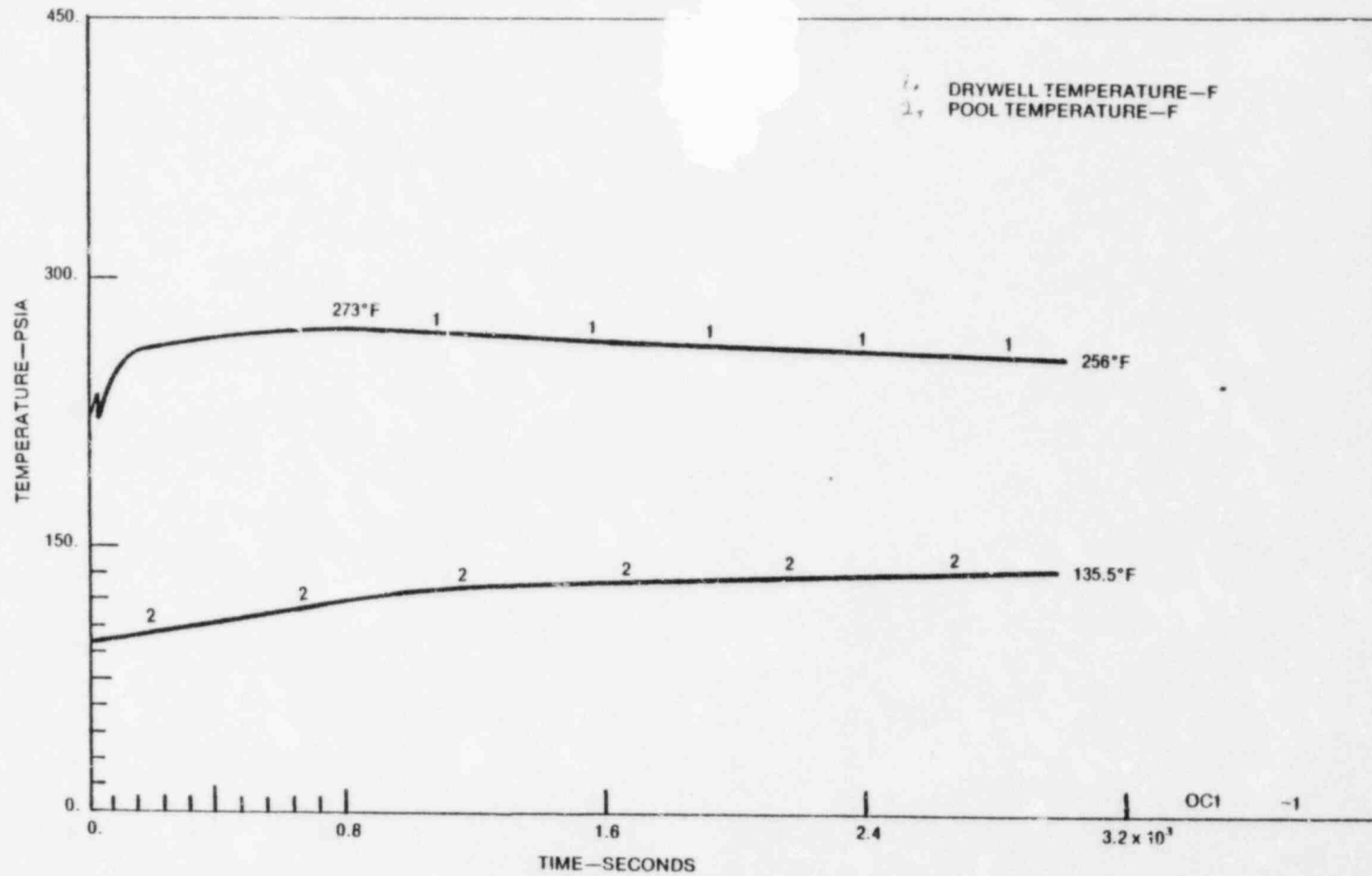


Figure A-4. Design Basis Accident Temperature as a Function of Time [8]

FIGURE SUPPLIED

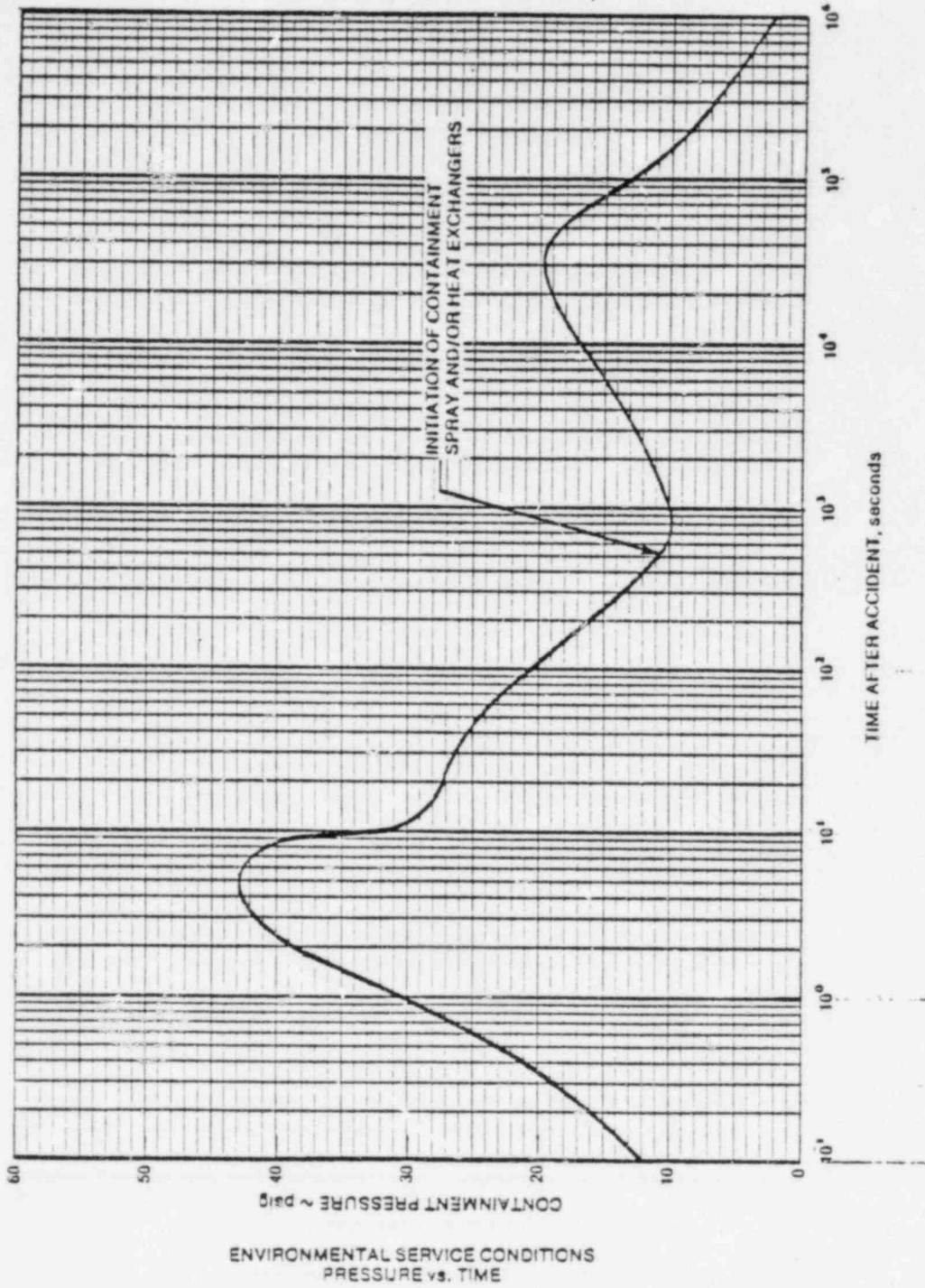


Figure A-5. Design Basis Accident Pressure as a Function of Time [FSAR]

See Fig A-6?

FIGURE SUPPLIED  
BY THE LICENSEE

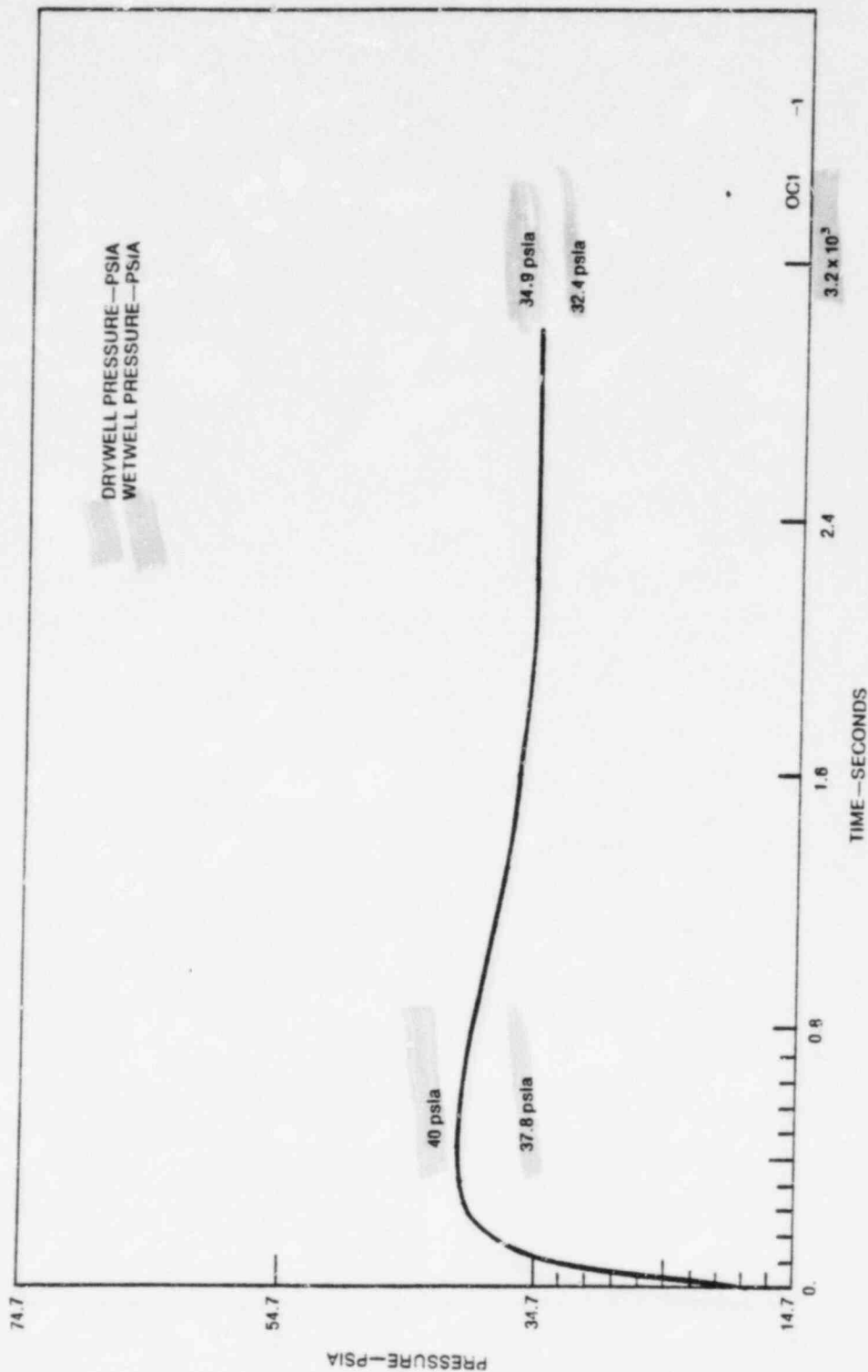


Figure A-6. Design Basis Accident Pressure as a Function of Time [8]

See A-5?

FIGURE SUPPLIED

ENVIRONMENTAL SERVICE CONDITIONS  
PRESSURE vs. TIME

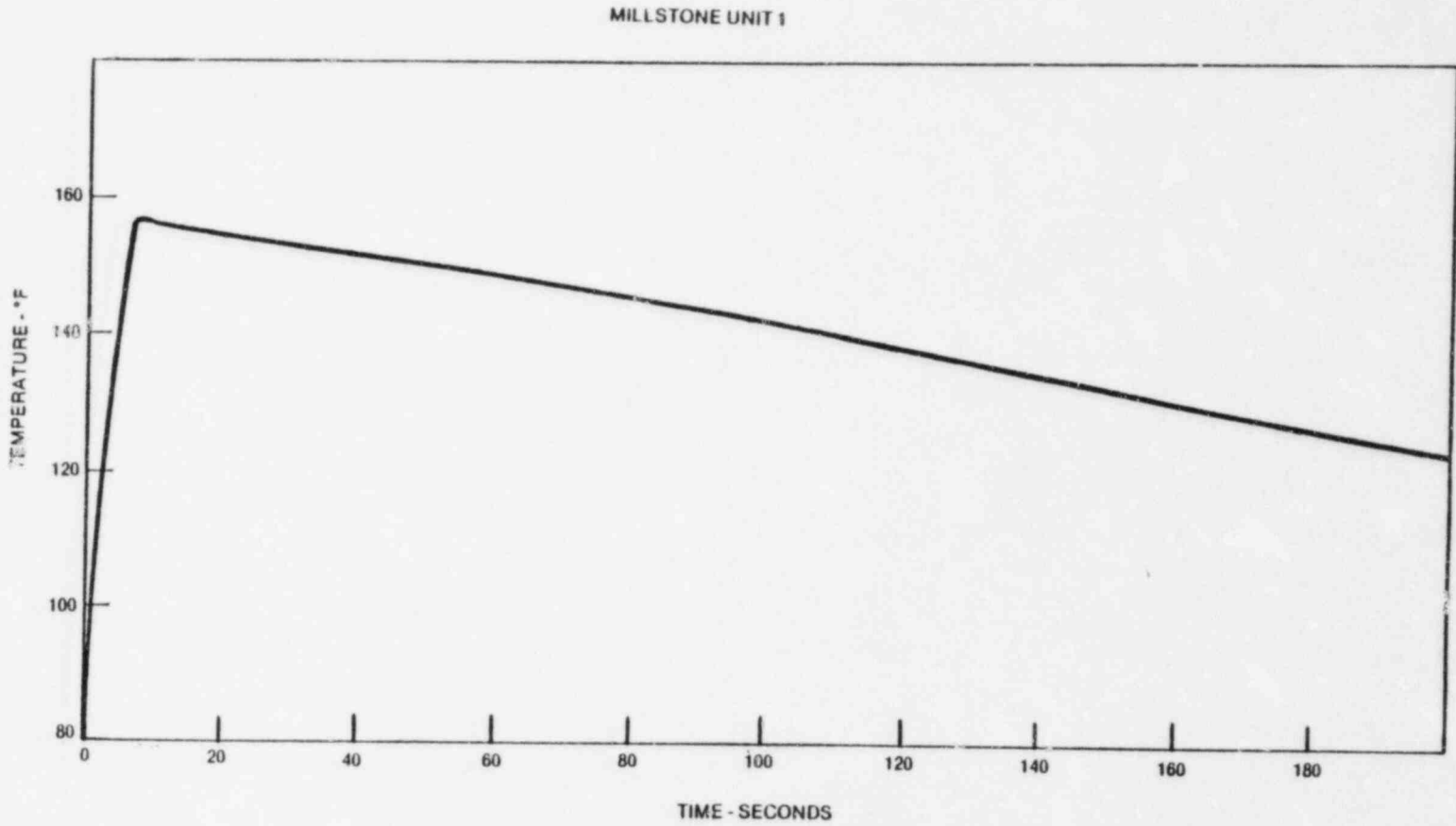


Figure A-7. Temperature Transient Resulting from MSLB in the Steam Tunnel in Reactor Building (Elevation 14'6") [8]

FIGURE SUPPLIED  
BY THE LICENSEE

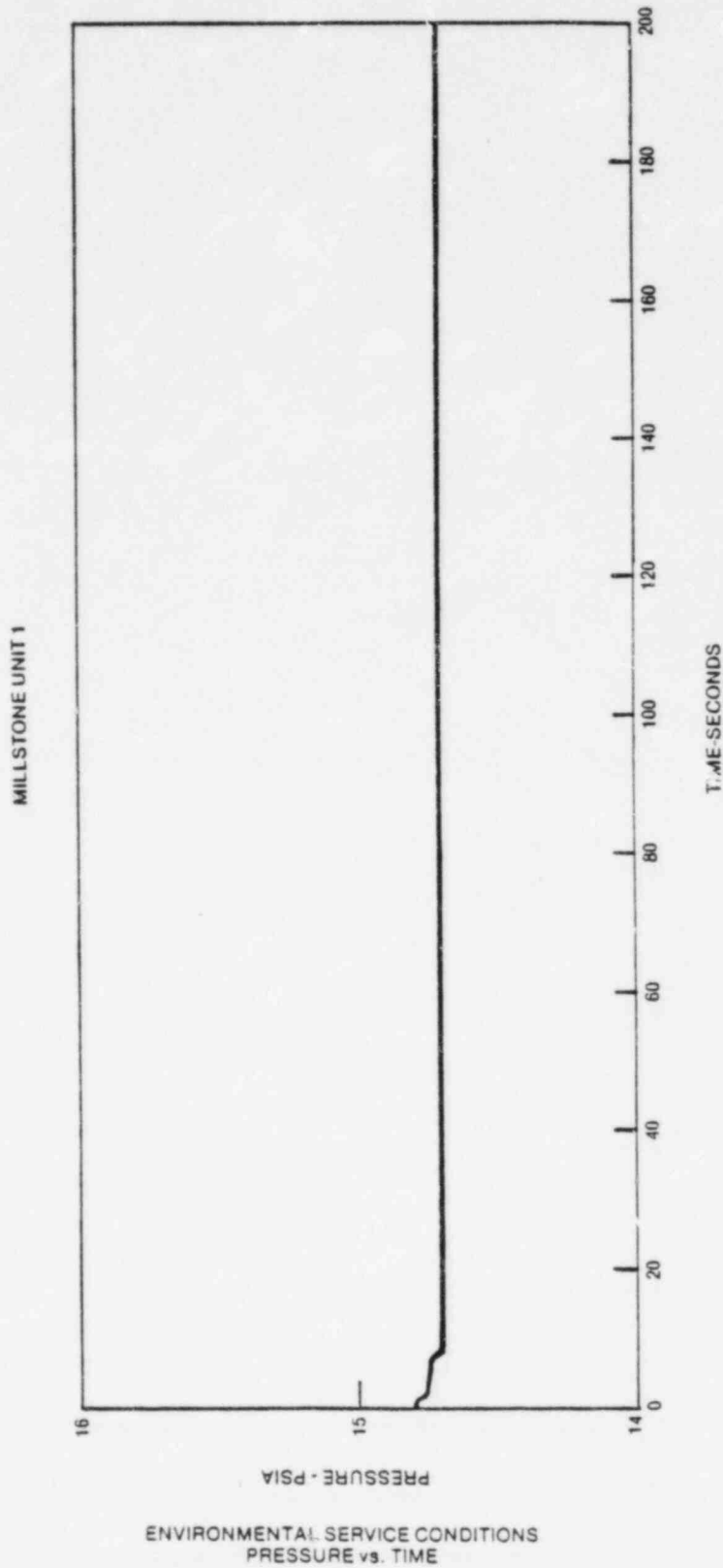
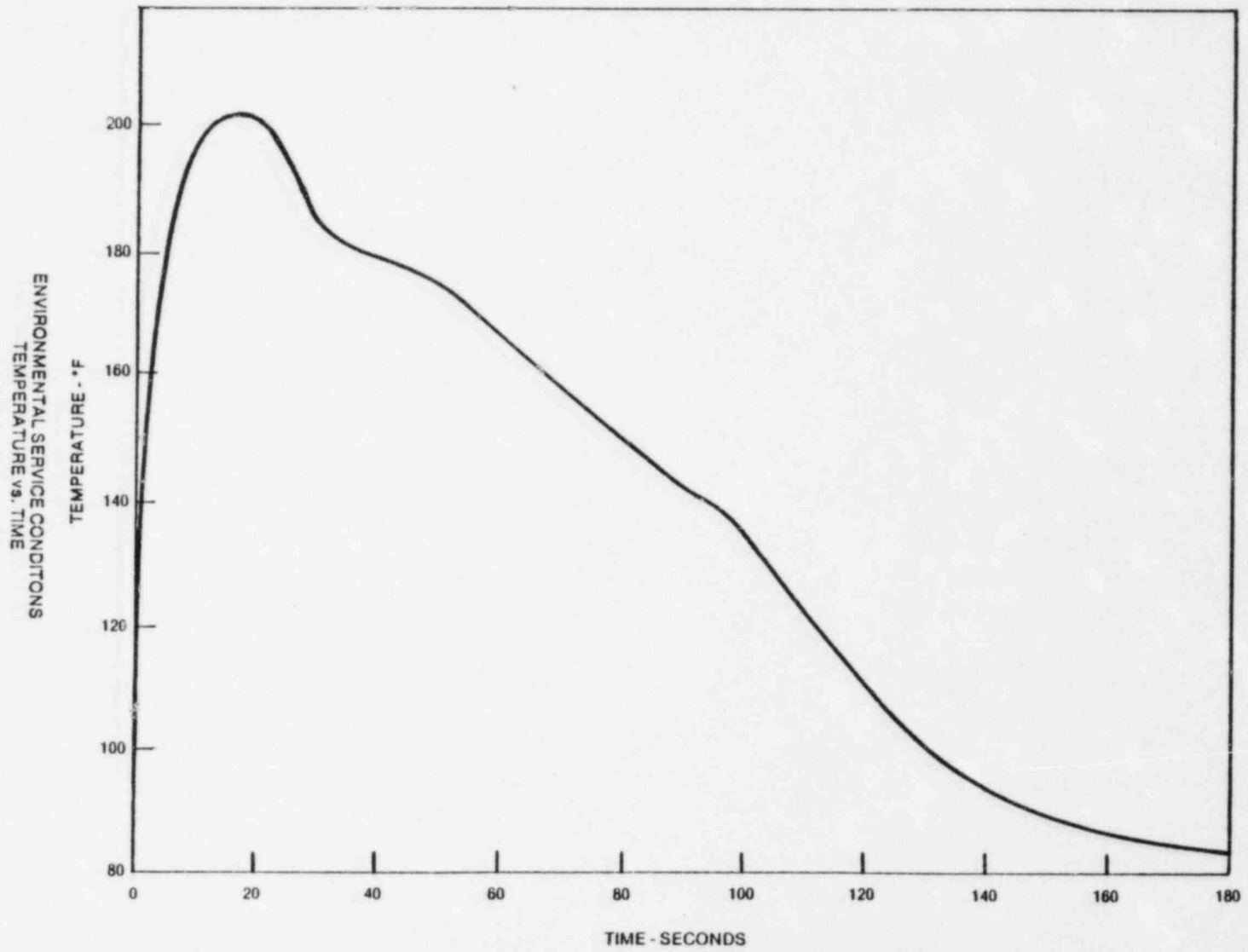


Figure A-8. Pressure Transient Resulting from MSLB in the Steam Tunnel in Reactor Building (Elevation 14'6") [8]

FIGURE SUPPLIED  
BY THE LICENSEE

MILLSTONE UNIT 1



ENVIRONMENTAL SERVICE CONDITIONS  
TEMPERATURE vs. TIME

TEMPERATURE - °F

TIME - SECONDS

Figure A-9. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 42'6") [8]

FIGURE SUPPLIED  
BY THE LICENSEE

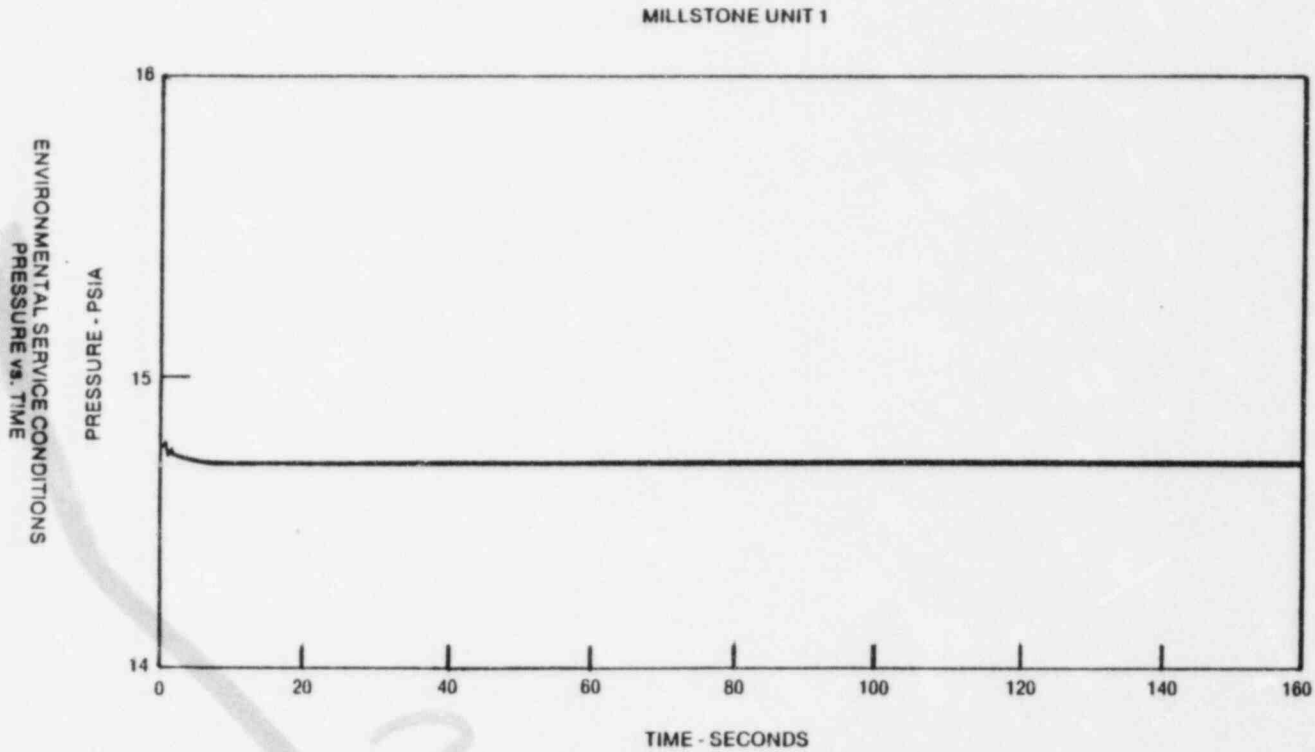


Figure A-10. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 42'6") [8]

FIGURE SUPPLIED  
BY THE LICENSEE



MILLSTONE UNIT 1

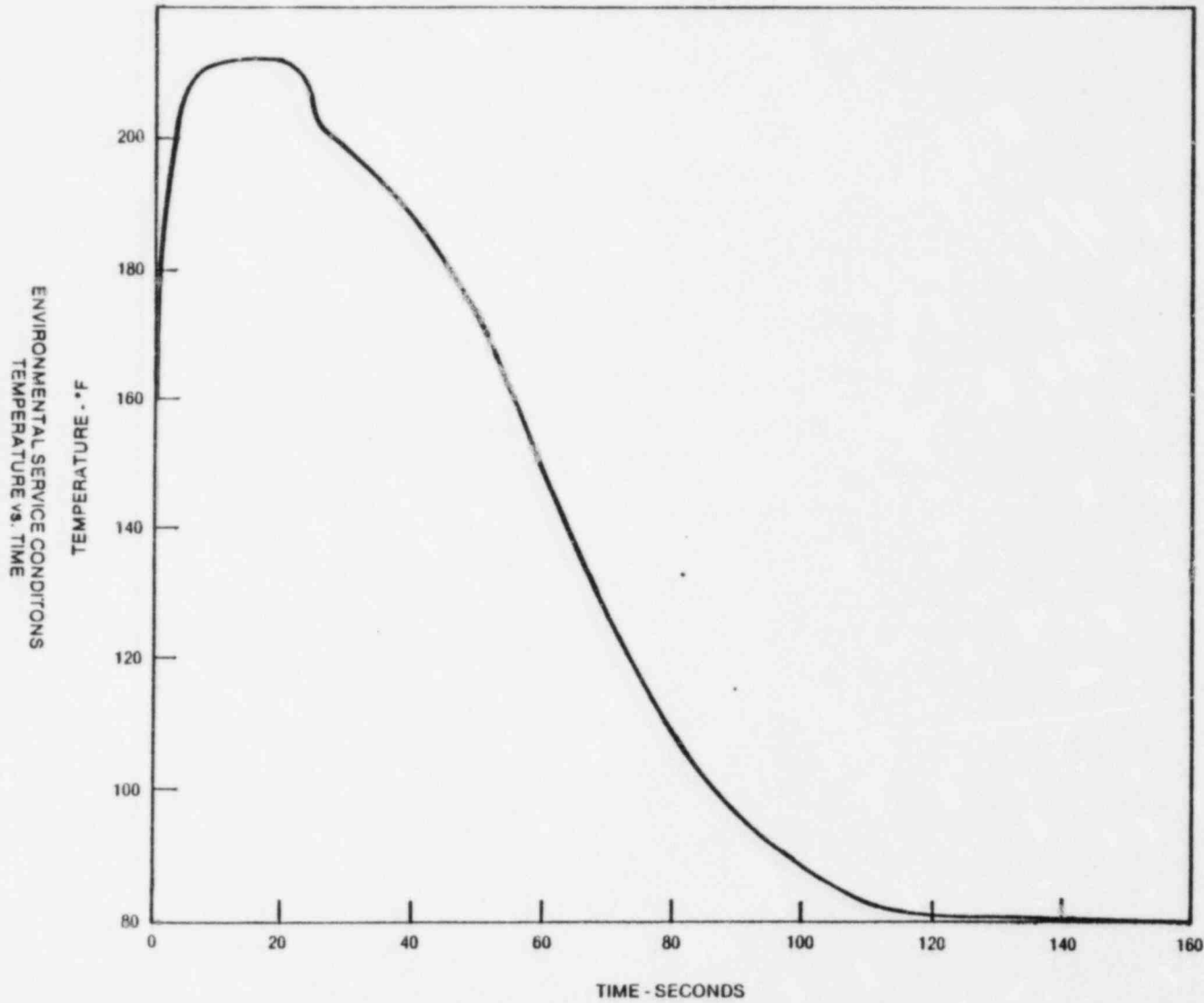


Figure A-11. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 65'9") [8]

FIGURE SUPPLIED  
BY THE LICENSEE

TER-C5257-459

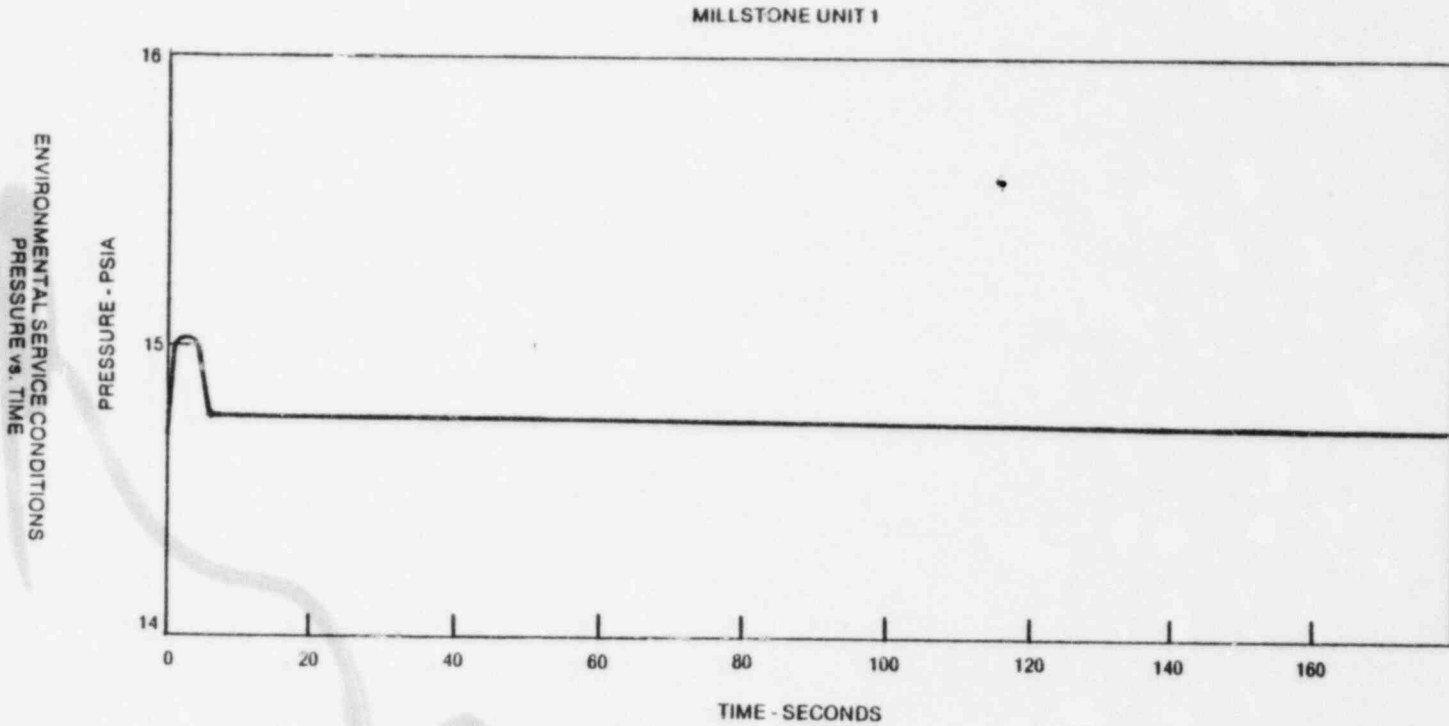


Figure A-12. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 65'9") [8]

MILLSTONE UNIT 1

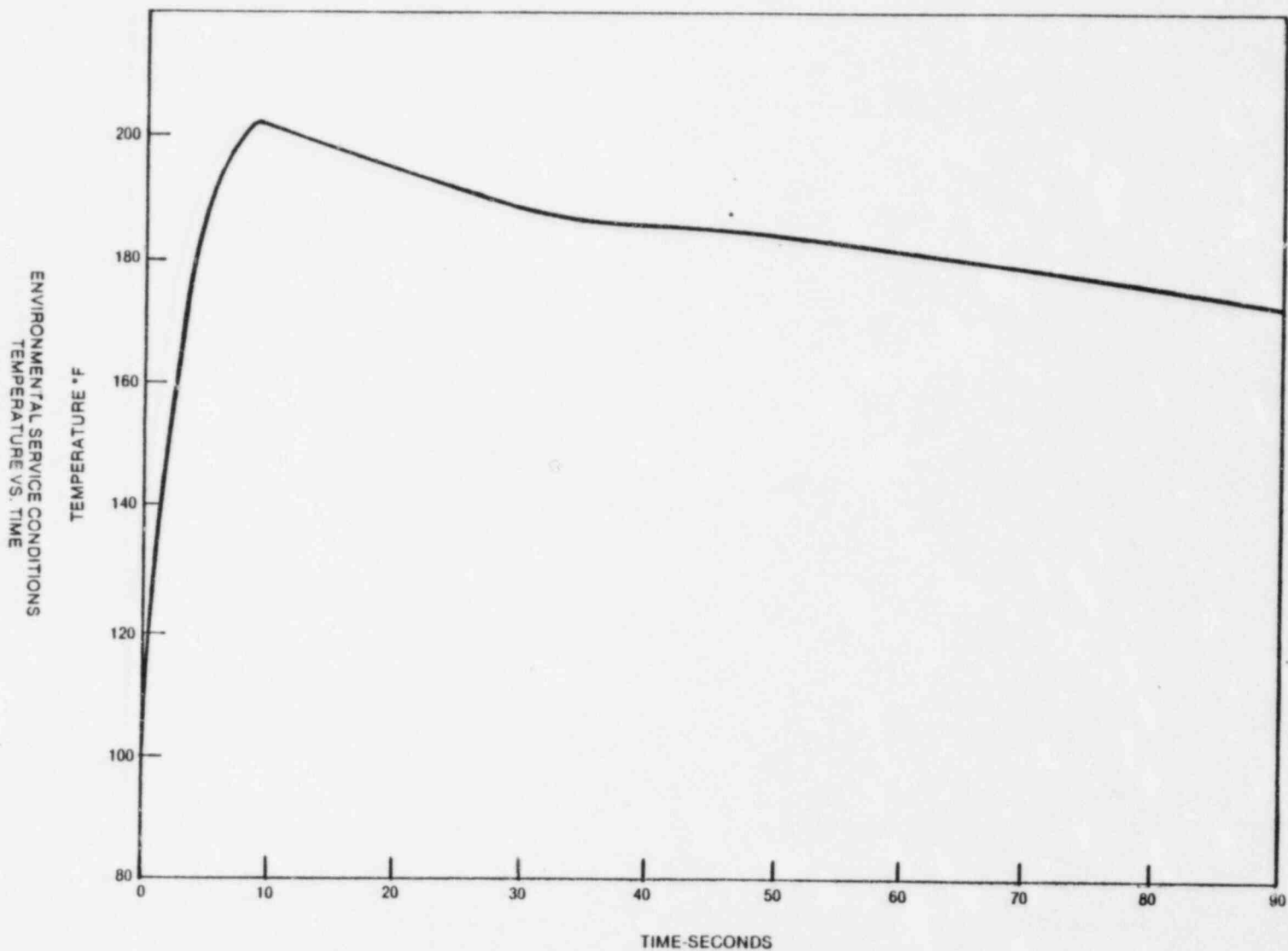


Figure A-13. Condenser Bay Temperature Transient Resulting from MSLB in Condenser Bay [8]

FIGURE SUPPLIED BY THE LICENSEE

TER-C5257-459

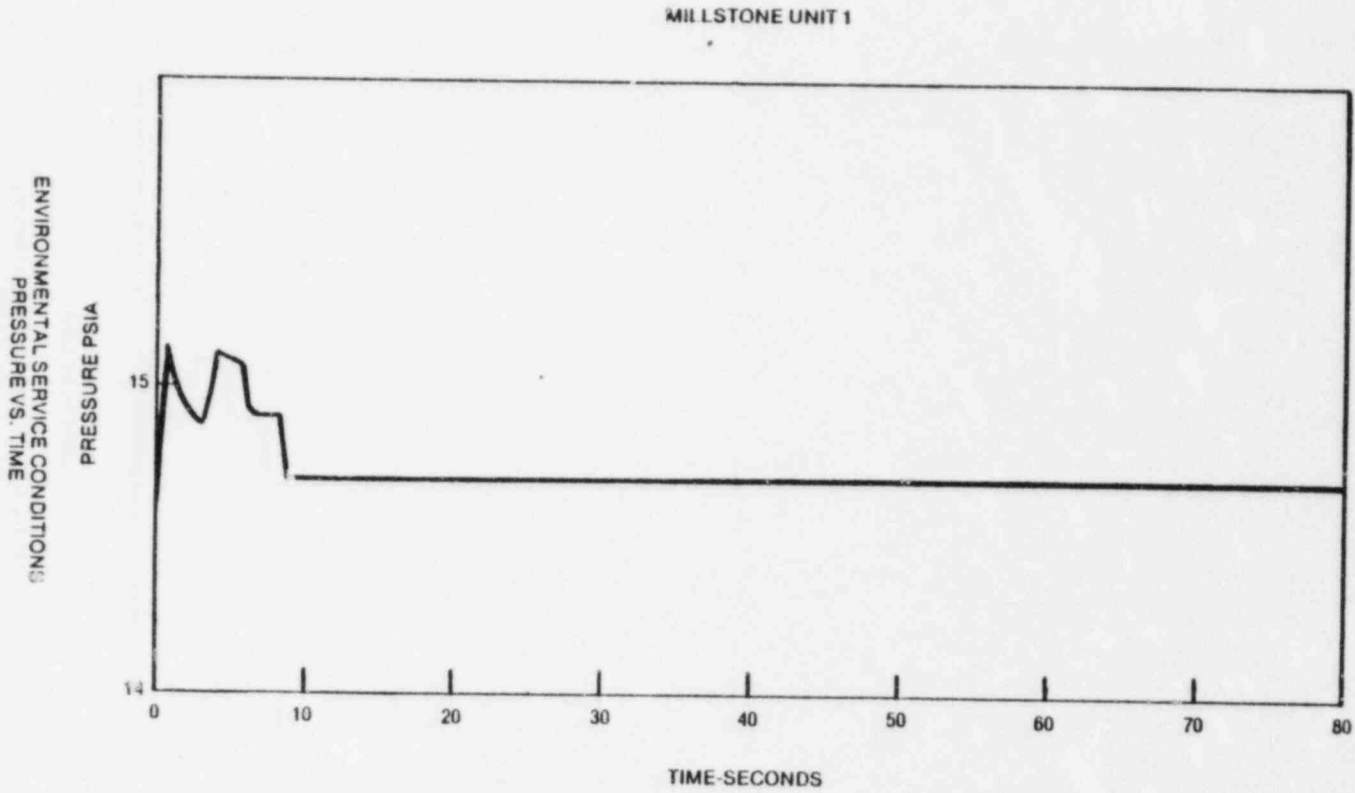


Figure A-14. Condenser Bay Pressure Transient Resulting from MSLB in Condenser Bay [8]

FIGURE SUPPLIED  
BY THE LICENSEE

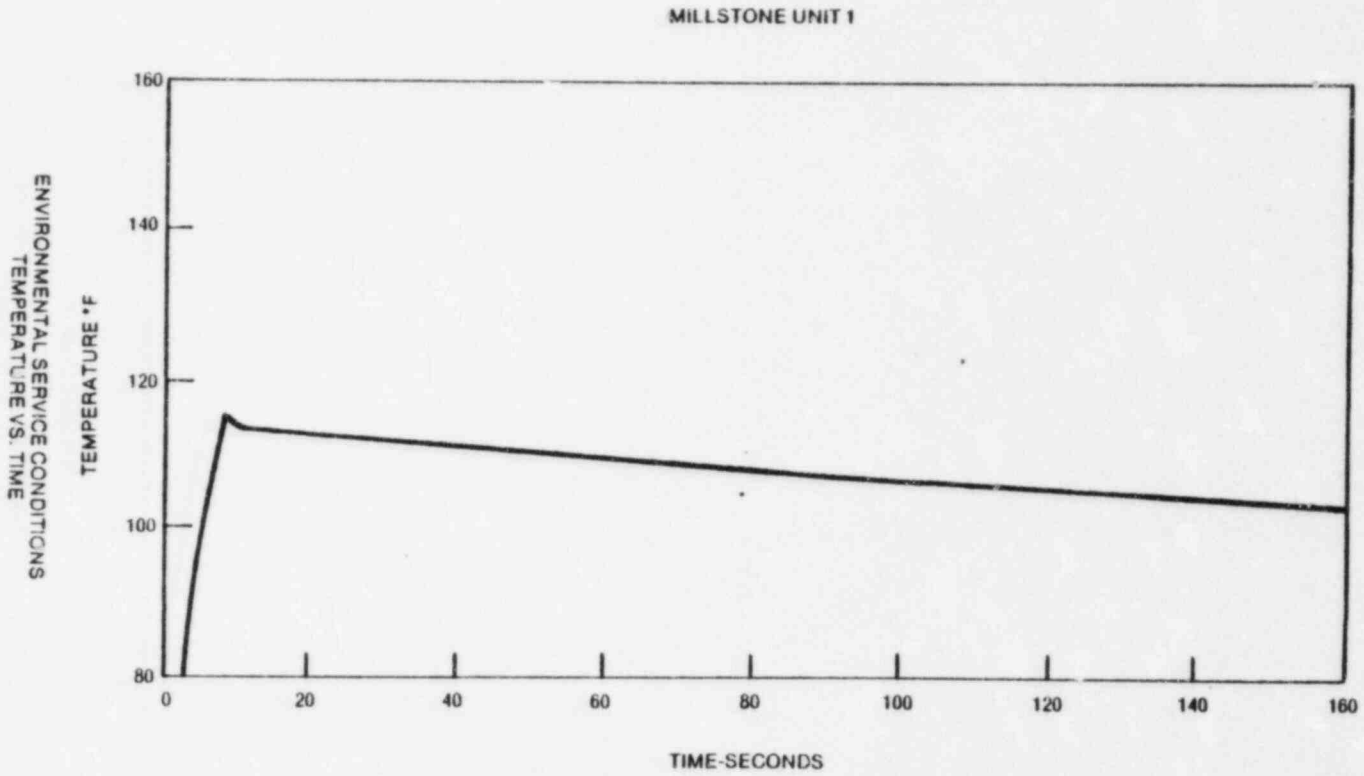


Figure A-15. Switchgear Room Temperature Transient  
Resulting from MSLB in Condenser Bay [8]

FIGURE SUPPLIED  
BY THE LICENSEE

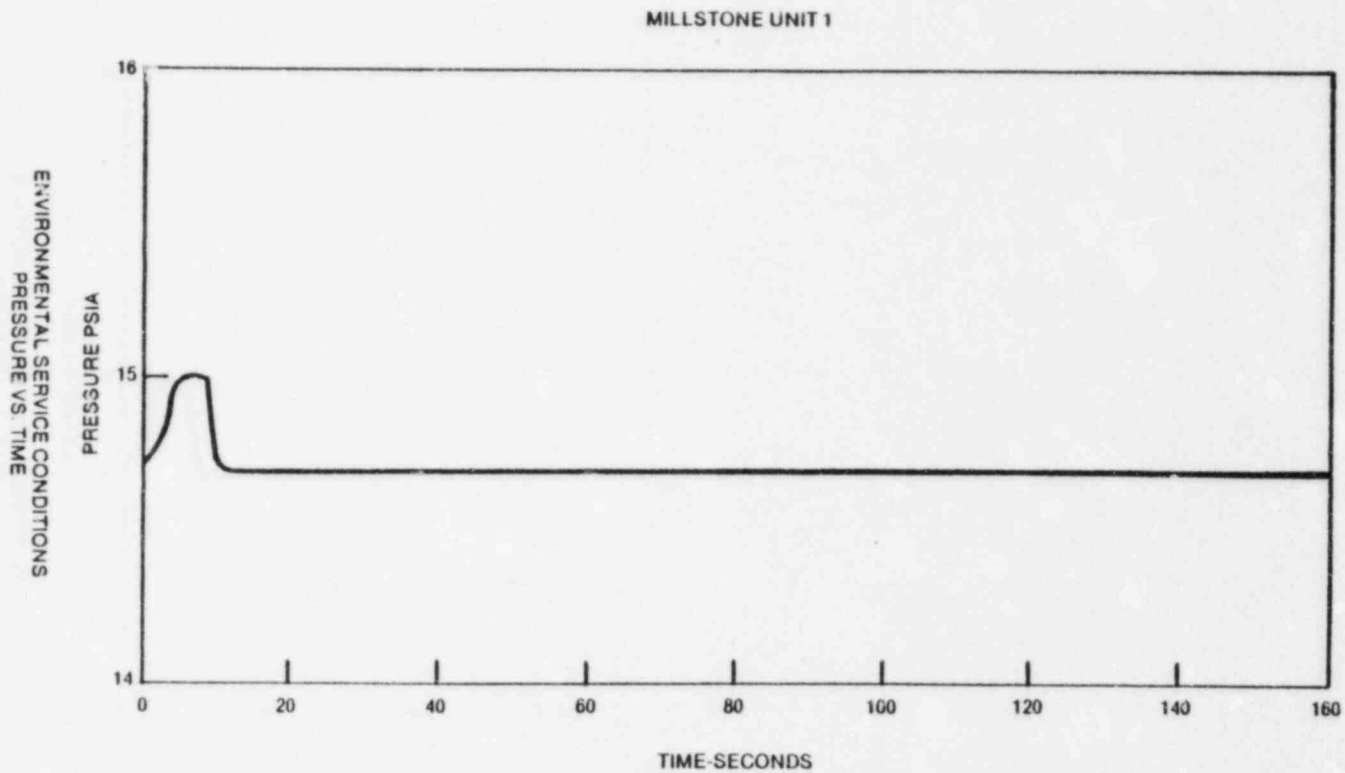


Figure A-16. Switchgear Room Pressure Transient Resulting from MSLB in Condenser Bay [8]

FIGURE SUPPLIED  
BY THE LICENSEE

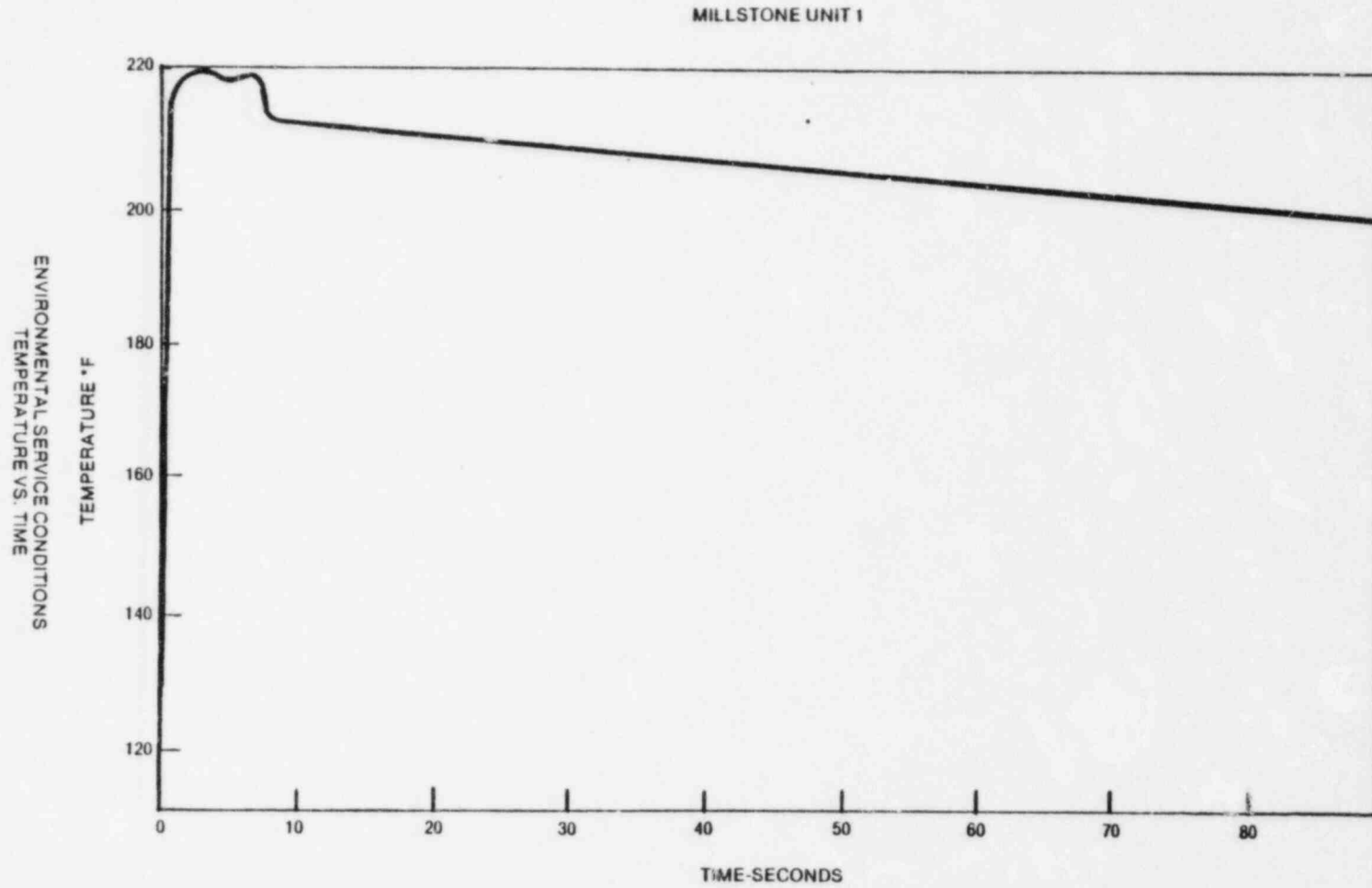


Figure A-17. Temperature Transient Resulting from MSLB in the Steam Tunnel [8]

FIGURE SUPPLIED  
BY THE LICENSEE

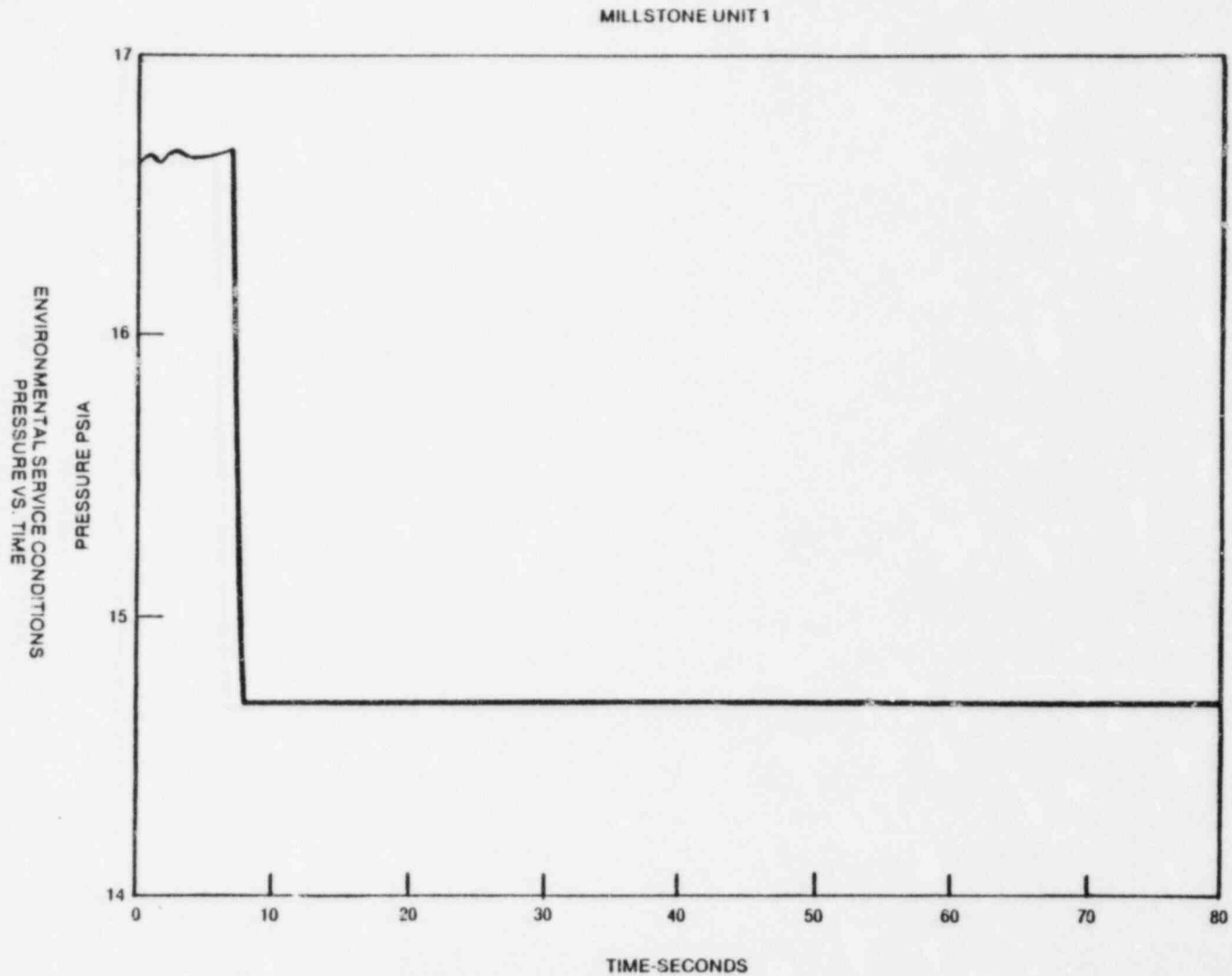


Figure A-18. Pressure Transient Resulting from MSLB in the Steam Tunnel [8]

TER-C5257-459

FIGURE SUPPLIED  
BY THE LICENSEE



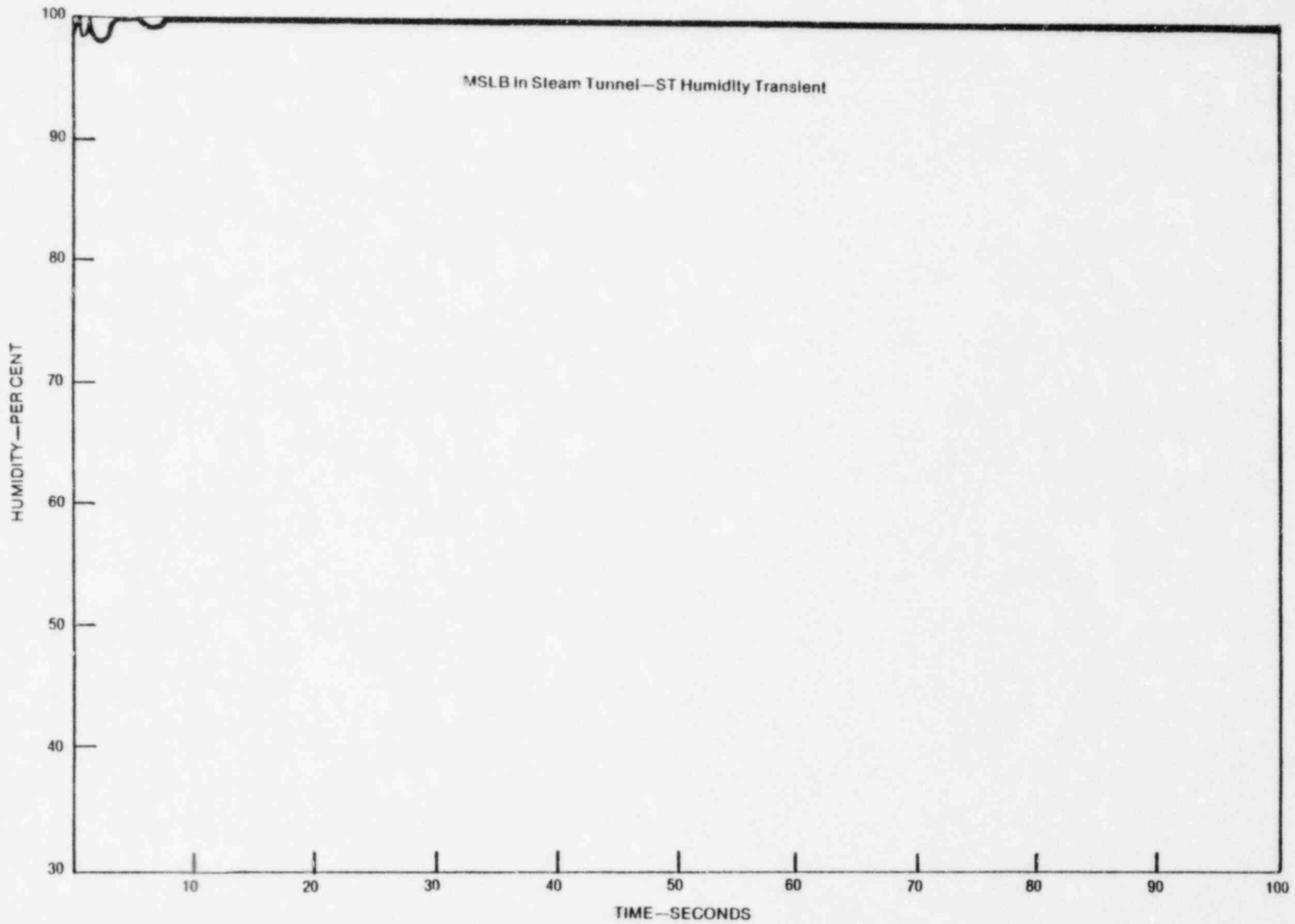


Figure A-19. Humidity Transient Resulting from MSLB in the Steam Tunnel [8]

**FIGURE SUPPLIED  
BY THE LICENSEE**

TR-C5257-459

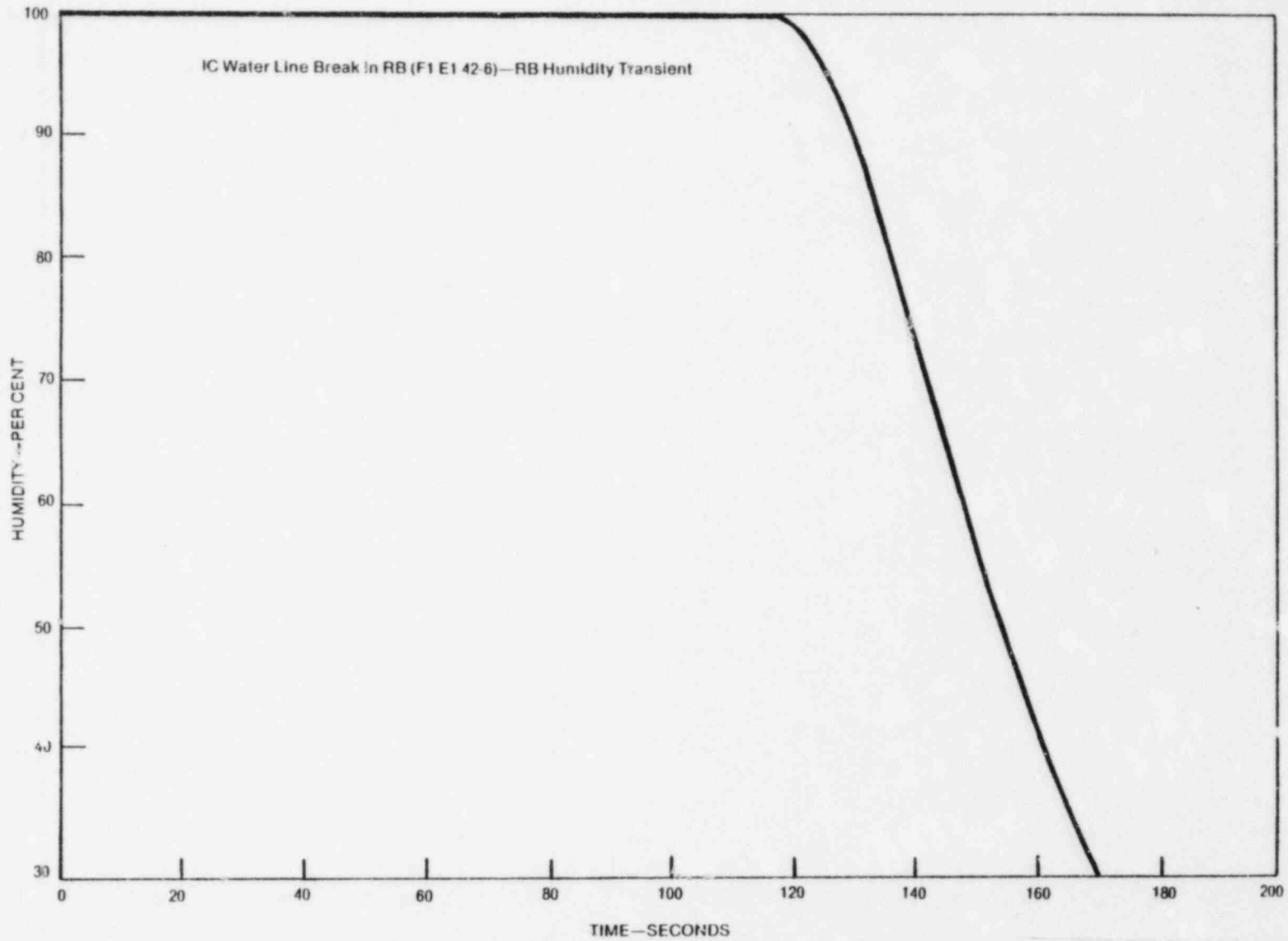


Figure A-20. Humidity Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 42'6") [8]

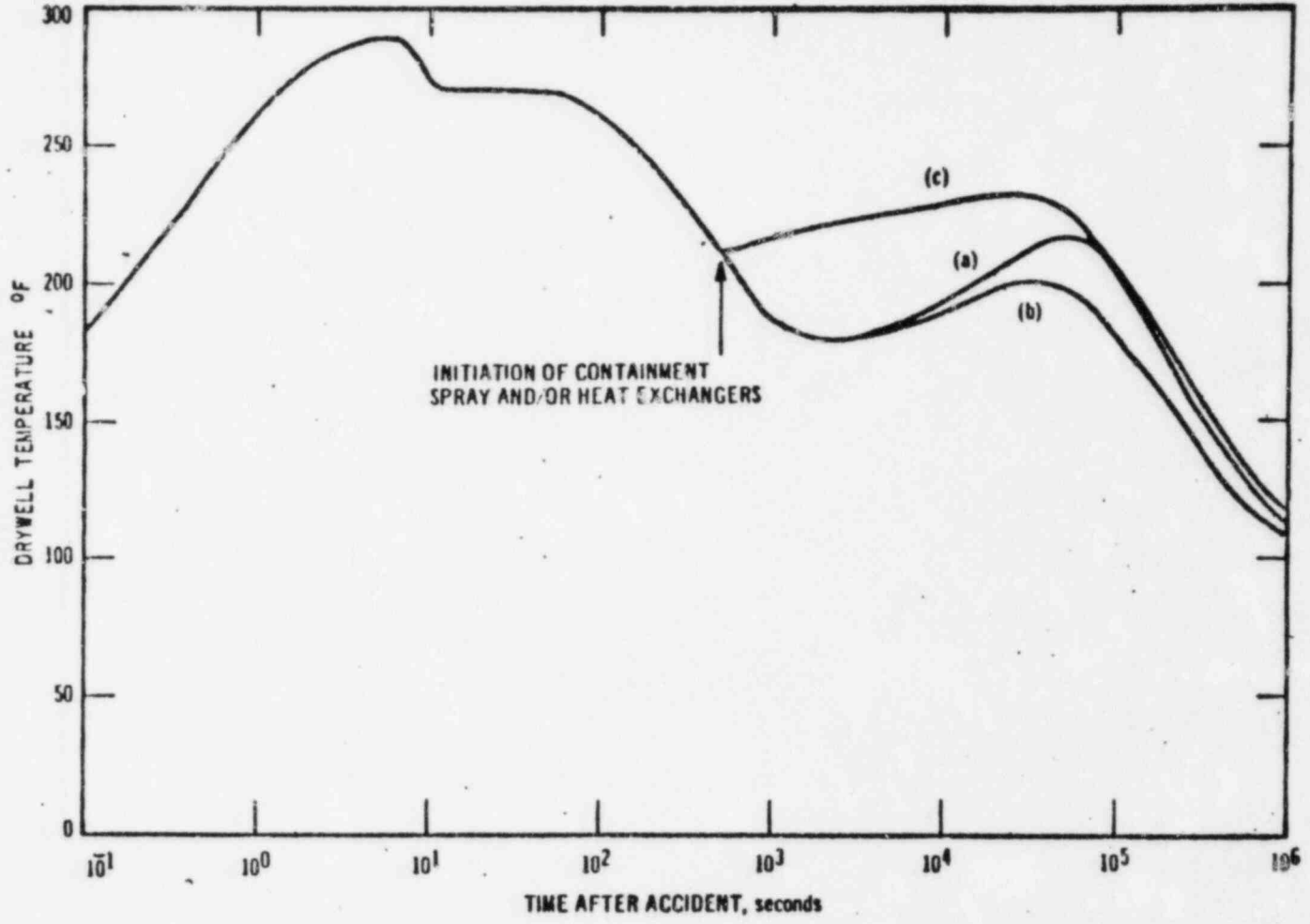


Figure A-21. FSAR Design Basis Accident Temperature as a Function of Time  
(Reference FSAR Figure V-2.16)

FIGURE SUPPLIED  
BY THE LICENSEE

TER-C5257-459

Profile 1  
Rev. 4-20-82

Profile 1  
Temperature Profile Corresponding to  
 $T_{sat} + 20^{\circ}F$

For Equipment Qualification Evaluations

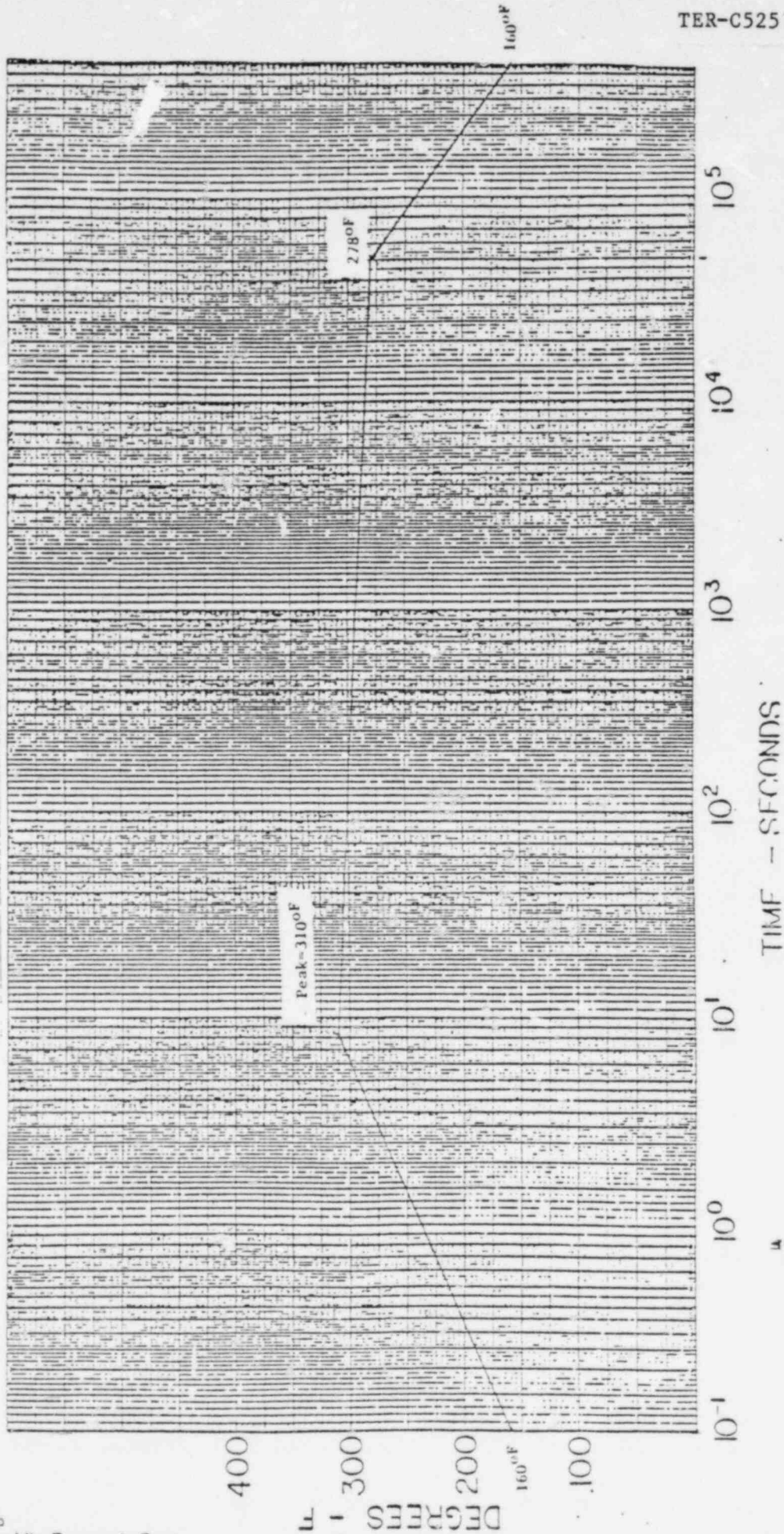


Figure A-22. Temperature Profile Corresponding to  $T_{sat} + 20^{\circ}F$  [42]

FIGURE SUPPLIED  
BY THE LICENSEE

Table A-1

## RADIATION SERVICE CONDITIONS\*

Receptor Point Location	40 Year <sup>1</sup> Dose (Rads)	Post-Accident Doses <sup>2</sup> (Rads)							
		1 Hour		24 Hours		720 Hours		6 Months	
		$\gamma$ (Gamma)	$\beta$ (Beta)	$\gamma$	$\beta$	$\gamma$	$\beta$	$\gamma$	$\beta$
Drywell	3.8E+6	7.1E+6	5.1E+7	3.9E+7	3.7E+8	8.8E+7	1.3E+9	9.0E+7	1.5E+9
Reactor Building									
1) Generic <sup>3</sup>	1.3E+6	3.1E+4	-	2.1E+5	-	5.3E+5	-	7.9E+5	-
2) Steam <sup>4</sup> Tunnel	1.1E+6	1.8E+6	2.5E+7	-	-	-	-	-	-
3) TIP Room	7.0E+5	1.6E+5	-	9.2E+5	-	2.1E+6	-	2.4E+6	-
Turbine Building									
1) 2 H Level	8.8E+2	-	-	-	-	-	-	-	-
2) Switchgear Area	3.5E+5	8.0E+2	-	4.3E+3	-	9.9E+3	-	1.0E+4	-
3) SGTs Room	7.0E+5	8.9E+5	-	4.0E+7	-	2.8E+9	-	3.7E+9	-
4) Turbine Ground Floor	2.8E+4	-	-	-	-	-	-	-	-
5) TBCCW, FBSCCW, Machine Shop, Boiler Room	1.1E+4	-	-	-	-	-	-	-	-
6) Condenser <sup>5</sup> Bay, 14.6 Elev.	3.5E+5	2.9E+5	1.4E+6	1.6E+6	9.8E+5	3.6E+6	3.2E+7	3.7E+6	3.6E+7
7) Condenser <sup>5</sup> Bay Floor	1.8E+6	2.9E+5	1.4E+6	1.6E+6	9.8E+6	3.6E+6	3.2E+7	3.7E+6	3.6E+7
Control Room	3.5E+1	<1	-	<1	-	<1	-	1.0E+0	-
Intake Structure & Gas Turbine Bldg.	1.8E+2	-	-	-	-	-	-	-	-

## Notes:

- Normal operating doses assumed a capacity factor of 100% for gamma and 80% for neutrons.
- Accident doses based on a DBA LOCA and assumed 50% of the core iodine and 100% of the core noble gases were initially released and uniformly mixed in the drywell. 50% of the core iodines and 1% of the solid fission products were assumed to be uniformly mixed in the available cooling water.
- Generic LOCA dose in the reactor building was taken in the corner room in the general vicinity of the LPCI pump motor. The normal operating dose was taken at the ground floor. The generic reactor building dose listed in the table above cannot be applied to the (a) cleanup filter sludge tank and cleanup pump room (second floor), (b) cleanup filter tank, cleanup demineralizer tanks and fuel pool cleanup demineralizer rooms. There is no electrical equipment required to be qualified in the above areas.
- Accident doses based on steamline break in pipe tunnel. 10% core activity of noble gas and halogens assumed to be released during break.
- These doses do not apply to equipment in contact with the turbine or any equipment in the general vicinity of the condensate demineralizer regeneration room and SJAE room of the Condenser Bay 14.6' elevation. There is no electrical equipment required to be qualified in these areas.
- Accident doses based on steamline break in condenser bay, 10% core activity of noble gas and halogens assumed to be released during break.

\*From Reference 8

FIGURE SUPPLIED  
BY THE LICENSEE

Table A-1 (Cont.)

Receptor Point Location	Total Dose <sup>1</sup> (Rads)							
	1 Hour		24 Hours		720 Hours		6 Months	
	$\gamma+n$	B(Beta)	$\gamma+n$	B	$\gamma+n$	B	$\gamma+n$	B
Drywell	1.1E+7	5.1E+7	4.3E+7	3.7E+8	9.2E+7	1.3E+9	9.4E+7	1.5E+9
Reactor Building								
1) Generic <sup>2</sup>	1.3E+6	-	1.5E+6	-	1.8E+6	-	2.1E+6	-
2) Steam Tunnel	2.9E+6	2.5E+7	-	-	-	-	-	-
3) TIP Room	8.6E+5	-	1.6E+6	-	2.8E+6	-	3.1E+6	-
Turbine Building <sup>3</sup>								
1) 2 M Level	8.8E+2	-	8.8E+2	-	8.8E+2	-	8.8E+2	-
2) Switchgear Area	3.5E+5	-	3.5E+5	-	3.6E+5	-	3.6E+5	-
3) SGTS Room	1.6E+5	-	4.1E+7	-	2.8E+9	-	3.7E+9	-
4) Turbine Ground Floor	2.8E+4	-	2.8E+4	-	2.8E+4	-	2.8E+4	-
5) TBCCW, TBSCCW, Machine Shop, Boiler Room	1.1E+4	-	1.1E+4	-	1.1E+4	-	1.1E+4	-
6) Condenser Bay, 14.6 Elev.	6.4E+5	1.4E+6	2.0E+6	9.8E+6	4.0E+6	3.2E+7	4.1E+6	3.6E+7
7) Condenser Bay Floor	2.1E+6	1.4E+6	3.4E+6	9.8E+6	5.4E+6	3.2E+7	5.5E+6	3.6E+7
Control Room	3.5E+1	-	3.5E+1	-	3.5E+1	-	3.6E+1	-
Intake Structure & Gas Turbine Bldg.	1.8E+2	-	1.8E+2	-	1.8E+2	-	1.8E+2	-

## Notes:

- Total dose includes normal operating doses and post accident doses as given in Table 1.
- Generic doses cannot be applied to the (a) cleanup filter sludge tank and cleanup pump room (second floor), (b) cleanup filter tank, cleanup demineralizer tanks and fuel pool cleanup demineralizer room (third floor) and fuel pool cleanup demineralizer room (third floor). There is no electrical equipment to be qualified in the above areas.
- These doses do not apply to equipment in contact with the turbine or any equipment in the general vicinity of the condensate demineralizer regeneration room and SJAE room of the Condenser Bay (14.6' elevation).

FIGURE SUPPLIED  
BY THE LICENSEE

## APPENDIX B - LISTING OF SAFETY-RELATED ELECTRICAL EQUIPMENT

The following table lists the groupings of safety-related electrical equipment items for the Millstone Unit 1 plant. Equipment items provided in the table are used in the detailed equipment environmental qualification evaluation presented in Section 4.4 and summarized in Section 4.2. This table was generated from the lists of equipment provided by the Licensee [22, 23, 27].

The Licensee identified an extensive list of safety-related electrical equipment in various locations of the plant. The equipment listed by the Licensee was analyzed, and all identical equipment located within plant areas that are exposed to the same environmental service conditions was grouped together and designated an "equipment item." In this report, the term "equipment item" refers to a specific type of electrical equipment, designated by manufacturer and model, which is representative of all identical equipment in a plant area exposed to the same environmental service conditions (e.g., Flow Transmitter, Fischer & Porter, Model 10B2496, located within containment). This analysis resulted in a reduced listing of equipment (equipment items) that formed the basis for the review. This appendix contains the tabulation of the equipment items, locations, function, plant identification numbers, required operating time, and applicable qualification documentation references.

Equipment Item No. 1  
Solenoid Valve Located in the Drywell  
Target Rock Model 1/2-SMS-A-01  
Actuates Relief Valve (1-MS-3A, B, C, D, E, F)  
Licensee References 807 and 3627  
Required Operating Time: 90 minutes  
TER Checksheet No. 1  
Reference 19, Section 4.6.2.0  
Licensee Submittal: Page I-1 [22]

Equipment Item No. 2  
Solenoid Valve Located in the Drywell  
Atkomatic Model 15-527  
Actuates Reactor Loop Sample Valve (1-SM-1)  
Licensee References 13 and 3623  
Required Operating Time: 5.5 seconds  
TER Checksheet No. 2  
Reference 19, Section 4.5.2.3  
Licensee Submittal: Page I-6 [22]

Equipment Item No. 3  
Solenoid Valve Located in the Reactor Building  
Atkomatic Model 15-527  
Actuates Reactor Loop Sample Valve (1-SM-2)  
Licensee Reference 3623  
Required Operating Time: 5.5 seconds  
TER Checksheet No. 3  
Reference 19, Section 4.5.2.3  
Licensee Submittal: Page I-7 [22]

Equipment Item No. 4  
Solenoid Valve Located in the Reactor Building  
Atkomatic 13110  
LPCI and Core Spray Pump Motor Cooling Water Valves (V10-5A, B and V10-4A, B)  
Licensee Reference 3631  
Required Operating Time: Less than 30 seconds  
TER Checksheet No. 4  
Reference 19, Section 4.6.25  
Licensee Submittal: Page I-22 [22]



Equipment Item No. 5  
Solenoid Valve Located in the Reactor Building  
ASCO Model NP8316E36E  
Backup Scram Initiation Valves (302-19C, D)  
Licensee Reference 649  
Required Operating Time: 1 second  
TER Checksheet No. 5  
Reference 19, Section 4.3.1.1  
Licensee Submittal: Page I-38 [22]

Equipment Item No. 6  
Solenoid Valve Located in the Reactor Building  
ASCO Model HVA90405-2A  
Backup Scram Initiation Valves (302-19A, B; -20A, B)  
Licensee Reference 3635  
Required Operating Time: 1 second  
TER Checksheet No. 6  
Reference 19, Section 4.5.2.12  
Licensee Submittal: Page I-15 [22]

Equipment Item No. 7  
Solenoid Valve Located in the Drywell  
ASCO Model LBX8320  
Actuates Main Steam Isolation Valves (IMS-1A, B, C, D)  
Licensee References 839 and 3628  
Required Operating Time: 5.5 seconds  
TER Checksheet No. 7  
Reference 19, Section 4.5.2.1  
Licensee Submittal: Pages I-2 and I-3 [22]

Equipment Item No. 8  
Solenoid Valve Located in the Steam Tunnel  
ASCO Model LBX8320  
Actuates Main Steam Isolation Valves (IMS-2A, B, C, D)  
Licensee References 839 and 3628  
Required Operating Time: 5.5 seconds  
TER Checksheet No. 8  
Reference 19, Section 4.5.2.2  
Licensee Submittal: Pages I-4 and I-5 [22]

Equipment Item No. 9  
Solenoid Valve Located in the Reactor Building  
ASCO Model LB 831615  
Actuates Containment Isolation Valves (1-AC-6, -7, -8, -10, -11)  
Licensee References 3637 and 3638  
Required Operating Time: 11 seconds  
TER Checksheet No. 9  
Reference 19, Section 4.5.2.21  
Licensee Submittal: Pages I-9 and I-17 [22]

Equipment Item No. 10  
Solenoid Valve Located in the Reactor Building  
ASCO Model LB8316B15  
Actuates Containment Isolation Valves (1-AC-4, 5)  
Licensee Reference 3637  
Required Operating Time: 11 seconds  
TER Checksheet No. 10  
Reference 18, Section 4.5.2.21  
Licensee Submittal: Page I-9 [22]

Equipment Item No. 11  
Solenoid Valve Located in the Reactor Building  
ASCO Model HB 8302C27F  
Actuates Containment Isolation Valve (1-AC-12)  
Licensee Reference 3633  
Required Operating Time: 16.5 seconds  
TER Checksheet No. 11  
Reference 19, Section 4.5.2.21  
Licensee Submittal: Page I-10 [22]

Equipment Item No. 12  
Solenoid Valve Located in the Reactor Building  
ASCO Model 8302C27RF  
Actuates Iso-Condenser Steam Vent Valves (1-IC-6, -7)  
Licensee Reference 3640  
Required Operating Time: 5.5 seconds  
TER Checksheet No. 12  
Reference 19, Section 4.5.2.20  
Licensee Submittal: Page I-8 [22]

Equipment Item No. 13  
Solenoid Valve Located in the Reactor Building  
ASCO Model 8302C27RF  
Actuates Drywell Drain Valves (1-SS-3, -4, -13, -14)  
Licensee Reference 3626  
Required Operating Time: 22 seconds  
TER Checksheet No. 13  
Reference 19, Section 4.5.2.21  
Licensee Submittal: Page I-11 [22]

Equipment Item No. 14  
Solenoid Valve Located in the Reactor Building  
ASCO Model WPLB8300D58R  
Actuates SBT System Inlet Damper (1-SG-1A, B)  
Licensee Reference 3639  
Required Operating Time: Continuous  
TER Checksheet No. 14  
Reference 19, Section 4.5.2.22  
Licensee Submittal: Page I-15 [22]

Equipment Item No. 15  
Solenoid Valve Located in the Drywell  
ASCO Model HT8320A189  
Actuates Bypass Valve (1-CU-2A)  
Licensee Reference 3625  
Required Operating Time: 19.2 seconds  
TER Checksheet 15  
Reference 19, Section 4.5.2.23  
Licensee Submittal: Page I-16 [22]

Equipment Item No. 16  
Solenoid Valve Located in the Reactor Building  
ASCO Model HB8302C27F  
Actuates Containment Isolation Valve in the Containment Atmosphere Control  
System (1-AC-9)  
Licensee Reference 3633  
Required Operating Time: 16.5 seconds  
TER Checksheet No. 16  
Reference 19, Section 4.5.2.11  
Licensee Submittal: Page I-18 [22]

Equipment Item No. 17  
Solenoid Valve Located in the Reactor Building  
ASCO Model 8300B61R  
Actuates Containment Isolation Valve in the Containment Atmosphere Control System (1-AC-17)  
Licensee Reference 3626  
Required Operating Time: 11 seconds  
TER Checksheet No. 17  
Reference 19, Section 4.5.2.11  
Licensee Submittal: Page I-20 [22]

Equipment Item No. 18  
Solenoid Valve Located in the Reactor Building  
ASCO Model LB831615  
Actuates Containment Isolation Valves in Atmosphere Control System (1601-8A)  
Licensee Reference 3634  
Required Operating Time: 11 seconds  
TER Checksheet No. 18  
Reference 19, Section 4.5.2.19  
Licensee Submittal: Page I-19 [22]

Equipment Item No. 19  
Solenoid Valve Located in the Reactor Building  
ASCO Model 831430  
Actuates Containment Isolation Valves in Atmospheric Control System (1601-8B)  
Licensee Reference 3636  
Required Operating Time: 11 seconds  
TER Checksheet No. 19  
Reference 19, Section 4.5.2.19  
Licensee Submittal: Page I-19 [22]

Equipment Item No. 20  
Solenoid Valve Located in the Turbine Building  
ASCO Model WPLB8300B58RU  
Actuates Standby Gas Treatment System Outlet Dampers (1-SG-2A, B, -4A, B)  
Licensee reference not cited  
Required Operating Time: 1 hour  
TER Checksheet No. 20  
Reference 19, Section 4.3.2.22  
Licensee Submittal: Page I-14 [27]

Equipment Item No. 21  
Solenoid Valve Located in the Turbine Building  
ASCO Model LB8344B39  
Actuate Containment Isolation Valve (1-HV-1, -2, -3, -4)  
Licensee reference not cited  
Required Operating Time: 1 hour  
TER Checksheet No. 21  
Reference 19, Section 4.3.2.22  
Licensee Submittal: Page I-13 [27]

Equipment Item No. 22  
I/P Converter Located in the Turbine Building  
Masoneilan Model 8005  
Controls Feedwater Coolant Injection Valves (FCV-642A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 22  
Reference 19, Section 4.6.3  
Licensee Submittal: Page II-2 [27]

Equipment Item No. 23  
Motorized Valve Actuator Located in the Reactor Building  
Velan Model 254B  
Actuates Service and Instrument Air Valves (1-SA-35, 1-IA-68)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 23  
Reference 19, Section 4.6.5  
Licensee Submittal: Page II-22 [27]

Equipment Item No. 24  
Motorized Valve Actuator Located in the Turbine Building  
Limatorque Model SMA with Reliance Motor, Model 447014-KT, Class B Insulation  
Actuates Service Water Isolation Valve (I-SW-9)  
Licensee Reference 3629  
Required Operating Time: Less than 30 seconds  
TER Checksheet No. 24  
Reference 19, Section 4.3.3.3  
Licensee Submittal: Page II-11 [22]

## Equipment Item No. 25

Motorized Valve Actuator Located in the Drywell

Limiterorque Model SMB

Actuates Recirculation Pump Discharge Isolation Valves (1-RR-2A, B)

Licensee reference not cited

Required Operating Time: Continuous

TER Checksheet No. 25

Reference 19, Section 4.5.2.6

Licensee Submittal: Page II-8 [22]

## Equipment Item No. 26

Motorized Valve Actuator Located in the Steam Tunnel

Limiterorque Model SMB-00 with Peerless DC Motor, Class RH Insulation

Actuates Containment Isolation Valve (1-MS-6)

Licensee Reference 3630

Required Operating Time: 38.4 seconds

TER Checksheet No. 26

Reference 19, Section 4.5.2.6

Licensee Submittal: Page II-16 [22]

## Equipment Item No. 27

Motorized Valve Actuator Located in the Drywell

Limiterorque Model SMB-000

Actuates Containment Isolation Valves (1-MS-5)

Licensee reference not cited

Required Operating Time: 38.4 seconds

TER Checksheet No. 27

Reference 19, Section 4.5.2.6

Licensee Submittal: Page II-14 [22]

## Equipment Item No. 28

Motorized Valve Actuator Located in the Reactor Building

Limiterorque Model SMB-000

Actuates Head Spray Valve (1-HS-4)

Licensee Reference 9

Required Operating Time: Continuous

TER Checksheet No. 28

Reference 19, Section 4.3.1.3

Licensee Submittal: Page II-21 [22]

Equipment Item No. 29  
Motorized Valve Actuator Located in the Reactor Building  
Limatorque Model SMB-2  
Actuates SW Discharge Valve, from RHR Heat Exchanger (1-LPC-4A, B)  
Licensee Reference 9  
Required Operating Time: Continuous  
TER Checksheet No. 29  
Reference 19, Section 4.3.1.3  
Licensee Submittal: Page II-24 [22]

Equipment Item No. 30  
Motorized Valve Actuator Located in the Turbine Building  
Limatorque Model SMB-3  
Actuates Feedwater Regulating Valves (1-FW-4A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 30  
Reference 19, Section 4.3.3.4  
Licensee Submittal: Page II-1 [27]

Equipment Item No. 31  
Motorized Valve Actuator Located in the Drywell  
Limatorque Model SMB-3  
Actuates Isolation Condenser Valve (1-IC-1)  
Licensee Reference 3618  
Required Operating Time: 26 seconds  
TER Checksheet No. 31  
Reference 19, Section 4.5.2.5  
Licensee Submittal: Page II-10 [22]

Equipment Item No. 32  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-10  
Actuates Core Spray Injection Valves (1-CS-4A, B)  
Licensee reference not cited  
Required Operating Time: 30 seconds  
TER Checksheet No. 32  
Reference 19, Section 4.5.2.4  
Licensee Submittal: Page II-9 [22]

Equipment Item No. 33  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-10  
Actuates RHR Heat Exchanger Bypass Valves (1-LP-7A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 33  
Reference 19, Section 4.5.2.16  
Licensee Submittal: Page II-33 [22]

Equipment Item No. 34  
Motorized Valve Actuator Located in the Drywell  
Teledyne Model T-10  
Actuates Containment Isolation Valves (1-IC-4, 1-CU-2)  
Licensee reference not cited  
Required Operating Time: 21 seconds  
TER Checksheet No. 34  
Reference 19, Section 4.5.2.5  
Licensee Submittal: Pages II-13 and II-26 [22]

Equipment Item No. 35  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-10  
Actuates Shutdown Cooling System Valves (1-SD-2A, B; -5; -4A, B;  
1-LP-2A, B, C, D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 35  
Reference 19, Section 4.7.6  
Licensee Submittal: Pages II-19, -20, and -25 [27]

Equipment Item No. 36  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-10  
Actuates LPCI Pump Suction Valves (1-LP-2A, B, C, D), Actuates Core Spray  
Injection Valves (1-CS-5A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 36  
Reference 19, Section 4.6.4  
Licensee Submittal: Pages II-2 and II-9a [22]



Equipment Item No. 37  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-10  
Actuates Containment Isolation Valves (1-CU-28), Actuates RHR Test Valves to  
Torus (1-LP-43A, B)  
Licensee reference not cited  
Required Operating Time: less than 30 seconds  
TER Checksheet No. 37  
Reference 19, Section 4.5.2.4  
Licensee Submittal: Pages II-23 and II-30 [22]

Equipment Item No. 38  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-4  
Actuates Emergency Condensate Transfer Pump Discharge Valve (1-MW-96A)  
Actuates Inboard Containment Spray Valves (1-LP-16A, B)  
Actuates Torus Spray Valves (1-LP-13A, B; 14A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 38  
Reference 19, Section 4.6.4  
Licensee Submittal: Pages II-3, II-7, II-27, and II-29 [22]

Equipment Item No. 39  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-4  
Actuates Reactor Clean-Up Pump Suction Valve (1-CU-5),  
Actuates Containment Isolation Valve (1-CU-3)  
Licensee reference not cited  
Required Operating Time: 20 seconds  
TER Checksheet No. 39  
Reference 19, Section 4.5.2.4  
Licensee Submittal: Pages II-15 and II-28 [22]

Equipment Item No. 40  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-4  
Actuates Core Spray Test Valves (1-CS-21A, B)  
Licensee reference not cited  
Required Operating Time: Less than 30 seconds  
TER Checksheet No. 40  
Reference 19, Section 4.5.2.18  
Licensee Submittal: Page II-37 [22]

Equipment Item No. 41  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-4  
Actuates Core Spray Pump Suction Valves (1-CS-2A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 41  
Reference 19, Section 4.6.4  
Licensee Submittal: Page II-17 [22]

Equipment Item No. 42  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-40  
Actuates Inboard LPCI System Injection Valves (1-LP-10A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 42  
Reference 19, Section 4.6.4  
Licensee Submittal: Page II-5 [22]

Equipment Item No. 43  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-40  
Actuates Test Return to Torus Valves (1-LP-44A, B)  
Licensee reference not cited  
Required Operating Time: Less than 30 seconds  
TER Checksheet No. 43  
Reference 19, Section 4.5.2.14  
Licensee Submittal: Page II-34 [22]

Equipment Item No. 44  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-40  
Actuates Outboard Containment Spray Valves (1-LP-15A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 44  
Reference 19, Section 4.6.4  
Licensee Submittal: Page II-6 [22]

Equipment Item No. 45  
Motorized Valve Actuator Located in the Reactor Building  
Teledyne Model T-40  
Actuates Containment Isolation Valves (1-IC-3; 1-IC-2), Actuates Outboard LPCI  
Valves (1-LP-9A,B)  
Licensee reference not cited  
Required Operating Time: less than 30 seconds  
TER Checksheet No. 45  
Reference 19, Section 4.5.2.4  
Licensee Submittal: Pages II-4, II-12, and II-36 [22]

Equipment Item No. 46  
Limit Switches Located in the Steam Tunnel  
NAMCO Snaplock  
MSIV Position Indication (1-MS-2A, B, C, D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 46  
Reference 19, Section 4.6.1  
Licensee Submittal: Page V-2 [22]

Equipment Item No. 47  
Limit Switches Located in the Drywell  
NAMCO Model EA-740  
MSIV Position Indication (1-MS-1A, B, C, D)  
Licensee Reference 809  
Required Operating Time: Continuous  
TER Checksheet No. 47  
Reference 19, Section 4.6.11  
Licensee Submittal: Page V-1 [22]

Equipment Item No. 48  
Limit Switches Located in the Reactor Building  
Micro-Switch Model DTF2-2RN  
Containment Sump Isolation Valve Position Indication (1-SS-3, -4, -13, -14)  
Licensee reference not cited  
Required Operating Time: 22 seconds  
TER Checksheet No. 48  
Reference 19, Section 4.6.2  
Licensee Submittal: Page V-11 [22]

Equipment Item No. 49  
Limit Switches Located in the Reactor Building  
Micro-Switch Model DTF2-2RN2  
Containment Isolation Valve Position Indication (1-IC-6, -7;  
1-AC-6, -7, -8, -11)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 49  
Reference 19, Section 4.6.2  
Licensee Submittal: Pages V-4, V-13, and V-14 [22]

Equipment Item No. 50  
Limit Switches Located in the Reactor Building  
Micro-Switch Model 51ML76922  
Containment Isolation Valve Position Indication (1-AC-12)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 50  
Reference 19, Section 4.6.2  
Licensee Submittal: Page V-17 [22]

Equipment Item No. 51  
Limit Switches Located in the Reactor Building  
Micro-Switch Model 51MLT6022  
Containment Isolation Valve Position Indication (1-AC-9)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 51  
Reference 19, Section 4.6.2  
Licensee Submittal: Page V-15 [22]

Equipment Item No. 52  
Limit Switches Located in the Reactor Building  
Micro-Switch Model BAF1-2RN2  
Containment Isolation Valve Position Indication (1-AC-4, -5, -10, -17;  
1601-8A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 52  
Reference 19, Section 4.6.2  
Licensee Submittal: Pages V-12, -16, -18, -19, and -21 [22]

Equipment Item No. 53  
Limit Switches Located in the Turbine Building  
Allen Bradley Model 802T-AW2 Ser-C  
Condensate Pump Valve Position Indication (V2-3A, B; V2-1A, B)  
Licensee reference not cited  
Required Operating Time: Not stated  
TER Checksheet No. 53  
Reference 19, Section 4.6.9  
Licensee Submittal: Pages V-3 and -4 [27]

Equipment Item No. 54  
Pressure Switch Located in the Reactor Building  
Static-O-Ring Model 5N-AA3  
LPCI System Permissive Signal (1501-72A, B, C, and D; 1501-82A, B, C, and D)  
Licensee reference not cited  
Required Operating Time: Not stated  
TER Checksheet No. 54  
Reference 19, Section 4.3.2.12  
Licensee Submittal: Page XI-4 [27]

Equipment Item No. 55  
Pressure Switch Located in the Reactor Building  
Static-O-Ring Model 12N-AA4  
Primary Containment Pressure (1501-83A, B, C, and D)  
Licensee reference not cited  
Required Operating Time: Not stated  
TER Checksheet No. 55  
Reference 19, Section 4.3.2.12  
Licensee Submittal: Page XI-9 [27]

Equipment Item No. 56  
Pressure Switch Located in the Reactor Building  
Barksdale Model B2T-A12SS  
LPCI System Line Break Detection (263-111A, B, C, D; 261-30A, B, C, D)  
Licensee reference not cited  
Required Operating Time: Not stated  
TER Checksheet No. 56  
Reference 19, Section 4.7.9  
Licensee Submittal: Page XI-10 [27]

Equipment Item No. 57  
Pressure Switch Located in the Reactor Building  
Barksdale Model B1T-A12SS-CS  
Reactor Low Pressure Trip (263-53A, B, C, and D)  
Licensee reference not cited  
Required Operating Time: Not stated  
TER Checksheet No. 57  
Reference 19, Section 4.3.2.13  
Licensee Submittal: Page XI-11 [27]

Equipment Item No. 58  
Pressure Switch Located in the Reactor Building  
Mercoid Model DA7043804R21E  
Core Spray System Trip (1462A, B, C, and D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 58  
Reference 19, Section 4.3.2.11  
Licensee Submittal: Page XI-3 [27]

Equipment Item No. 59  
Pressure Switch Located in the Reactor Building  
Barton Model 288  
Drywell Pressure (1621A, B, C, D; 1620A, B, C, D; 261-12A, B, C, D; 261-36A, B;  
261-37A, B; 261-38A, B; 261-39A, B; 1349A, B; 1350A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 59  
Reference 19, Section 4.3.2.10  
Licensee Submittal: Page XI-2 [27]

Equipment Item No. 60  
Pressure Switch Located in the Reactor Building  
Meletron Model 372-6ES49A-292  
Low Pressure Permissive for LPCI/Core Spray Valve (263-54A, B; 263-52C, D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 60  
Reference 19, Section 4.3.2.9  
Licensee Submittal: Page XI-1 [22]

Equipment Item No. 61

Pressure Switch Located in the Turbine Building  
Meletron Model 372

Suction Pressure Signal for Feedwater Pump Logic (PS-2-16, -20)  
Licensee reference not cited

Required Operating Time: Continuous  
TER Checksheet No. 61

Reference 19, Section 4.6.23

Licensee Submittal: Page XI-6 [27]

Equipment Item No. 62

Pressure Switch Located in the Reactor Building  
Meletron Model 9201-2L

LPCI Drywell High Pressure Interlock (1501-90A, B, C, D)  
Licensee reference not cited

Required Operating Time: Continuous  
TER Checksheet No. 62

Reference 19, Section 4.3.2.9

Licensee Submittal: Page XI-8 [27]

Equipment Item No. 63

Pressure Switch Located in the Turbine Building  
Dual Snap Model 604

Trip Logic for Condensate Booster Pump (PS-2-8, -9, -52, -53)  
Licensee reference not cited

Required Operating Time: Continuous  
TER Checksheet No. 63

Reference 19, Section 4.6.22

Licensee Submittal: Page XI-5 [27]

Equipment Item No. 64

Pressure Switch Located at the Top of the Torus  
Custom Component Model 630VH410S

Actuates Torus to Reactor Building Vacuum Relief Valves (1601-25A, B, C, D)  
Licensee reference not cited

Required Operating Time: Continuous  
TER Checksheet No. 64

Reference 19, Section 4.6.14

Licensee Submittal: Page XI-7 [22]

Equipment Item No. 65  
Pressure Switch Located in the Turbine Building  
Square D Model AGW 24 Class 9012  
Feedwater Pump Low Pressure Trip (PS-2-39A,B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 65  
Reference 19, Section 4.6.24  
Licensee Submittal: Page XI-7 [27]

Equipment Item No. 66  
Pressure Transmitter Located in the Reactor Building  
General Electric Model 551032GAAW1  
Reactor Pressure Indication (647-A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 66  
Reference 19, Section 4.3.2.14  
Licensee Submittal: Page XI-12 [27]

Equipment Item No. 67  
Level Switch Located in the Reactor Building  
Yarway Model 4418CE  
LPCI Low-Low Level Indication (263-73A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 67  
Reference 19, Section 4.7.8  
Licensee Submittal: Page VII-4 [27]

Equipment Item No. 68  
Level Switch Located in the Reactor Building  
Yarway Model 4418C  
Low Reactor Water Level Indication (263-57A, B; -72A, B, C, D; -58A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 68  
Reference 19, Section 4.3.2.3  
Licensee Submittal: Page VII-1 [27]



Equipment Item No. 69  
Level Switch Located in the Condenser Bay of the Turbine Building  
Magnetrol Model 730  
Monitors Condenser Level for Condensate Pump Logic (LS-2-3, -4, -23, -24)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 69  
Reference 19, Section 4.6.21  
Licensee Submittal: Page VII-2 [27]

Equipment Item No. 70  
Level Transmitter Located in the Reactor Building Torus Room (Area T-10)  
Gould Model PD3018-400-38-11-10-55-40  
Torus Water Level (LT-1630A, B)  
Licensee Reference 828  
Required Operating Time: Continuous  
TER Checksheet No. 70  
Reference 19, Section 4.7.4  
Licensee Submittal: Page XV-17 [22]

Equipment Item No. 71  
Flow Switch Located in the Reactor Building  
PEECO Model HP-F  
Verifies LPCI Pump Operation (1501-81A, B, C, D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 71  
Reference 19, Section 4.3.2.4  
Licensee Submittal: Page VII-3 [27]

Equipment Item No. 72 (TMI Action Plan Item II.D-3)  
Accelerometer for Acoustic Monitoring System Located in the Drywell  
Endevco Model 2273AM20  
Relief Valve Flow Indication (LS-203A, B, C, D, E, F)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 72  
Reference 19, Section 4.7.2  
Licensee Submittal: Page XV-15 [22]

Equipment Item No. 73 (TMI Action Plan Item II.D-3)  
Acoustic Monitoring Preamplifier Located in the Drywell  
Endevco Model 22CA-TR  
Relief Valve Flow Indication (LS-203A, B, C, D, E, F)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 73  
Reference 19, Section 4.7.3  
Licensee Submittal: Page XV-16 [22]

Equipment Item No. 74  
Relay Located in the Reactor Building  
Chromalox Model D2936-25  
Actuates Cooling Water Flow to LPCI Pump Motors (V10-4A, B; V10-5A, B)  
Licensee reference not cited  
Required Operating Time: Less than 30 seconds  
TER Checksheet No. 74  
Reference 19, Section 4.6.12  
Licensee Submittal: Page VIII-1 [22]

Equipment Item No. 75  
Temperature Element Located in the Reactor Building  
Conax Model RTD  
Measures Torus Water Temperature (1601-50, 1601-51; 14 of each)  
Licensee Reference 3617  
Required Operating Time: Continuous  
TER Checksheet No. 75  
Licensee Submittal: Page IX-6 [22]

Equipment Item No. 76  
Temperature Switch Located in the Steam Tunnel  
Fenwal Model 17002-40  
Detects Steam Tunnel High Temperature (261-15A-D, 16A-D, 17A-D, 18A-D)  
Licensee References 28, 824, 827, and 1792  
Required Operating Time: 5 seconds  
TER Checksheet No. 76  
Reference 19, Section 4.5.2.10  
Licensee Submittal: Page IX-1 [22]

Equipment Item No. 77 (TMI Action Plan Item)  
Radiation Detector Located in the Drywell  
General Atomic Model RD-23  
Post-Accident Radiation Monitor  
Licensee References 1722, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2848,  
3445, 3446, and 3447  
Required Operating Time: Continuous  
TER Checksheet No. 77  
Reference 19, Section 4.7.1  
Licensee Submittal: Page X-1 [22]

Equipment Item No. 78  
Radiation Monitor Located in the Reactor Building  
General Electric Model 194X927  
SBGT Initiation on High Radiation (1735CH-A, B; 1740CH-1, 2)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 78  
Reference 19, Section 4.3.2.8  
Licensee Submittal: Page X-2 [27]

Equipment Item No. 79  
Electrical Penetrations Located in the Drywell  
General Electric Type NS  
Electrical Continuity Pressure Boundary (X-100A, B, D; X-103; X-104D; X-102;  
X-105B, D; X-101A, C; X-100D, E; X-102; X-104A, B, C, E; X-106A; X-108A)  
Licensee References 10, 811 and 812  
Required Operating Time: Continuous  
TER Checksheet No. 79  
Reference 19, Section 4.6.6  
Licensee Submittal: Pages III-1, -2, -3 [22]

Equipment Item No. 80  
Terminal Blocks Located in the Drywell and the Reactor Building  
General Electric Model EB-25  
Electrical System Continuity and Wire Termination (1-MS-1A)  
Licensee References 718 and 3619  
Required Operating Time: Continuous  
TER Checksheet No. 80  
Reference 19, Section 4.6.8  
Licensee Submittal: Page III-4 [22]

Equipment Item No. 81  
Terminal Block Located in the Reactor Building  
General Electric Model CR151  
Electrical System Continuity and Wire Termination  
Licensee References 814 and 3632  
Required Operating Time: Continuous  
TER Checksheet No. 81  
Licensee Submittal: Page III-5 [22]

Equipment Item No. 82  
Electrical Connector Located in the Drywell  
Conax Model N-11001-32  
Connection and Seal for MSIV Limit Switches (1-MS-1A, B, C, D;  
1CU-2A)  
Licensee Reference 2178  
Required Operating Time: Continuous  
TER Checksheet No. 82  
Reference 19, Section 4.3.1.2  
Licensee Submittal: Page III-7 [22]

Equipment Item No. 83  
Electrical Connector Located in the Drywell  
Ideal Set Screw Type MARR  
Electrical Connection in Various Systems  
Licensee Reference 905  
Required Operating Time: Continuous  
TER Checksheet No. 83  
Reference 19, Section 4.3.3.1  
Licensee Submittal: Page III-8 [42]

Equipment Item No. 84  
Electrical Connector Located in the Turbine Building  
Burndy, Pad and Tape Type  
Electrical Connection (1-SW-9)  
Licensee Reference 3624  
Required Operating Time: Continuous  
TER Checksheet No. 84  
Reference 19, Section 4.6.19  
Licensee Submittal: Page III-15 [22]

Equipment Item No. 85  
Electrical Connector Located in the Reactor Building  
Burndy, Pad and Tape Type  
Electrical Connection (1401A, B; M8-75A through D)  
Licensee Reference 3624  
Required Operating Time: Continuous  
TER Checksheet No. 85  
Reference 19, Section 4.6.16  
Licensee Submittal: Page III-11 [22]

Equipment Item No. 86  
Electric Connectors Located in the Reactor Building  
Burndy, Ring Tongue/Butt Splice and Tape  
Electrical Connection in Various Systems  
Licensee Reference 3624  
Required Operating Time: Continuous  
TER Checksheet No. 86  
Reference 19, Section 4.6.17  
Licensee Submittal: Pages III-12 and III-13 [22]

Equipment Item No. 87  
Electrical Connector Located in the Steam Tunnel  
Burndy, Ring Tongue/Butt Splices and Tape  
Electrical Connection in Various Systems (1-MS-2A, B, C, D; 1-MS-6)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 87  
Reference 19, Section 4.6.15  
Licensee Submittal: Page III-10 [22]

Equipment Item No. 88  
Electrical Connector Located in the Drywell  
Burndy, Ring Tongue and Tape Type  
Electrical Connection in Various Systems (1-IC-1, -4; 1-MS-5; 1-SM-1;  
1-CU-2, -2A; 1-MS-1A, B, C, D [DC SOL.])  
Licensee Reference 3620  
Required Operating Time: Continuous  
TER Checksheet No. 88  
Reference 19, Section 4.6.15  
Licensee Submittal: Page III-9 [22]

Equipment Item No. 89  
Electrical Cable Splice Located in the Drywell  
Raychem Type WCSF-N  
Electrical Connection in Various Systems  
Licensee References 29 and 815  
Required Operating Time: Continuous  
TER Checksheet No. 89  
Reference 19, Section 4.5.2.8  
Licensee Submittal: Page III-6 [22]

Equipment Item No. 90 (TMI Action Plan Item 11.D-3)  
Electrical Cable Located in the Drywell  
Endevco & Unholtz-Dickie 3075M6  
Acoustic Monitoring System (LS-203A, B, C, D, E, F)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 90  
Reference 19, Section 4.7.5  
Licensee Submittal: Page IV-26 [22]

Equipment Item No. 91 (TMI Action Plan Item)  
Electrical Cable Located in the Drywell  
Rockbestos Model RSS-6-104  
Electrical Cable for Radiation Monitor  
Licensee Reference 3247  
Required Operating Time: Continuous  
TER Checksheet No. 91  
Licensee Submittal: Page IV-27 [22]

Equipment Item No. 92  
Electrical Cable Located in the Drywell  
Kerite FR/FR  
Electrical Distribution  
Licensee References 29, 819, and 820  
Required Operating Time: Continuous  
TER Checksheet No. 92  
Reference 19, Section 4.5.2.7  
Licensee Submittal: Pages IV-1, -3, -4, -5, -6, -8 [22]

Equipment Item No. 93  
Electrical Cable Located in the Drywell  
Kerite HTK/FR  
Electrical Distribution  
Licensee References 29, 819, and 820  
Required Operating Time: Continuous  
TER Checksheet No. 93  
Reference 19, Section 4.5.2.7  
Licensee Submittal: Page IV-2 [22]

Equipment Item No. 94  
Electrical Cable Located in the Drywell  
General Electric Type SI-58073  
Electrical Distribution  
Licensee References 11, 1588, and 3621  
Required Operating Time: Continuous  
TER Checksheet No. 94  
Reference 19, Section 4.6.7  
Licensee Submittal: Page IV-11 [22]

Equipment Item No. 95  
Electrical Cable Located in the Steam Tunnel  
General Electric Type SI-58073  
Electrical Distribution  
Licensee References 11 and 1588  
Required Operating Time: Continuous  
TER Checksheet No. 95  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-12 [22]

Equipment Item No. 96  
Electrical Cable Located in the Reactor Building  
General Electric Type SI-58073  
Electrical Distribution  
Licensee References 11 and 1588  
Required Operating Time: Continuous  
TER Checksheet No. 96  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-18 [22]

Equipment Item No. 97  
Electrical Cable Located in the Turbine Building  
General Electric Type SI-58073  
Electrical Distribution  
Licensee References 11 and 1588  
Required Operating Time: Continuous  
TER Checksheet No. 97  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-19 [22]

Equipment Item No. 98  
Electrical Cable Located in the Steam Tunnel  
General Electric Type SI-58081  
Electrical Distribution  
Licensee References 14 and 2694  
Required Operating Time: Continuous  
TER Checksheet No. 98  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-13 [22]

Equipment Item No. 99  
Electrical Cable Located in the Reactor Building  
General Electric Type SI-58081  
Electrical Distribution  
Licensee References 14 and 2694  
Required Operating Time: Continuous  
TER Checksheet No. 99  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-22 [22]

Equipment Item No. 100  
Electrical Cable Located in the Turbine Building  
General Electric Type SI-58081  
Electrical Distribution  
Licensee References 14 and 2694  
Required Operating Time: Continuous  
TER Checksheet No. 100  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-23 [22]



Equipment Item No. 101  
Electrical Cable Located in the Drywell  
General Electric Type SI-58110  
Electrical Distribution  
Licensee References 11, 1588, and 3622  
Required Operating Time: Continuous  
TER Checksheet No. 101  
Reference 19, Section 4.6.7  
Licensee Submittal: Pages IV-9a and -9b [22]

Equipment Item No. 102  
Electrical Cable Located in the Reactor Building  
General Electric Type SI-58145  
Electrical Distribution  
Licensee References 11 and 1588  
Required Operating Time: Continuous  
TER Checksheet No. 102  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Pages IV-20 and IV-24 [22]

Equipment Item No. 103  
Electrical Cable Located in the Turbine Building  
General Electric Type SI-58145  
Licensee References 11 and 1588  
Required Operating Time: Continuous  
TER Checksheet No. 103  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Pages IV-21 and -25 [22]

Equipment Item No. 104  
Thermocouple Cable Located in the Reactor Building  
General Electric, Copper/Constantan  
Transmits Torus Temperature Signal  
Licensee Reference 3621  
Required Operating Time: Continuous  
TER Checksheet No. 104  
Reference 19, Section 4.3.3.2  
Licensee Submittal: Page IV-10 [22]

Equipment Item No. 105  
Electric Motor Located in the Turbine Building  
General Electric Model 5K184AL217  
Drives Standby Gas Treatment Exhaust Fans (HVE-5A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 105  
Reference 19, Section 4.3.2.2  
Licensee Submittal: Page VI-9 [27]

Equipment Item No. 106  
Electric Motor Located in the Turbine Building  
General Electric Model 5K831171A2  
Drives Condensate Booster Pumps (M2-7A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 106  
Reference 19, Section 4.6.10  
Licensee Submittal: Page VI-2 [27]

Equipment Item No. 107  
Electric Motor Located in the Turbine Building  
General Electric Model 5K6339XC44A  
Drives Condensate Pumps (M2-6A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 107  
Reference 19, Section 4.6.10  
Licensee Submittal: Page VI-1 [27]

Equipment Item No. 108  
Electric Motor Located in the Turbine Building  
General Electric Model 5K861186A1  
Drives Reactor Feedwater Pumps (M2-10A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 108  
Reference 19, Section 4.6.10  
Licensee Submittal: Page VI-3 [27]

Equipment Item No. 109  
Electric Motors Located in the Intake Structure  
General Electric Model 5K6326XC317A  
Drives Containment Spray Cooling Water Pumps (M4-13A, B, C, D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 109  
Reference 19, Section 4.7.12  
Licensee Submittal: Page VI-7 [27]

Equipment Item No. 110  
Electric Motor Located in the Intake Structure  
General Electric Model 5K6338XC39A  
Drives Service Water Pumps (M4-7C, D)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 110  
Reference 19, Section 4.7.12  
Licensee Submittal: Page VI-5 [27]

Equipment Item No. 111  
Electric Motor Located in the Reactor Building  
General Electric Model 5K818841A134  
Drives Emergency Condensate Transfer Pump (M7-28)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 111  
Reference 19, Section 4.5.2.9  
Licensee Submittal: Page VI-4 [22]

Equipment Item No. 112  
Electric Motor Located in the Reactor Building  
General Electric Model 5K6329XC3A  
Drives Emergency Core Cooling and Containment Spray Pumps (M8-75A, B, C, D)  
Licensee References 821 and 3616  
Required Operating Time: Continuous  
TER Checksheet No. 112  
Reference 19, Section 4.5.2.9  
Licensee Submittal: Page VI-6 [22]

Equipment Item No. 113  
Electric Motor Located in the Reactor Building  
General Electric Model 5K6338XC28A  
Drives Core Spray Cooling Pumps (1401A, B)  
Licensee References 821 and 3616  
Required Operating Time: Continuous  
TER Checksheet No. 113  
Reference 19, Section 4.5.2.9  
Licensee Submittal: Page VI-8 [22]

Equipment Item No. 114  
Electric Motor Located in the Reactor Building  
General Electric Model 5K447XAM206  
Drives Shutdown Cooling Pumps (1002A, B; 1A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 114  
Reference 19, Section 4.7.11  
Licensee Submittal: Page VI-10 [27]

Equipment Item No. 115  
Motor Control Center Located in the Turbine Building  
General Electric Model HP171366  
125-V dc Distribution (DC-1-1A, -11A, -3)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 115  
Reference 19, Section 4.3.2.17  
Licensee Submittal: Page XII-7 [27]

Equipment Item No. 116  
Motor Control Center Located in the Reactor Building  
General Electric Model HP171366  
125-V dc Distribution (11A-2)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 116  
Reference 19, Section 4.3.2.17  
Licensee Submittal: Page XII-6 [27]

Equipment Item No. 117  
Motor Control Center Located in the Turbine Building  
General Electric Model 7700  
Emergency Power System (BUS 2-5, 2A-5, 2-6, 2-4, 2A-6, 2A-4)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 117  
Reference 19, Section 4.7.10  
Licensee Submittal: Page XII-4 [27]

Equipment Item No. 118  
Motor Control Center Located in the Diesel Room  
General Electric Model 7700  
Emergency Power System (480V-MCC-22A-1)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 118  
Reference 19, Section 4.7.10  
Licensee Submittal: Page XII-5 [27]

Equipment Item No. 119  
Motor Control Center Located in the GTG Building  
General Electric Model 7700  
Emergency Power System (MCC-1)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 119  
Reference 19, Section 4.7.10  
Licensee Submittal: Page XII-10 [27]

Equipment Item No. 120  
Motor Control Center Located in the Reactor Building  
General Electric Model 7700  
Emergency Power (MCC2-3, 2A-1, 2A-3, 2-3NE, 2A-3NE, 2-1)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 120  
Reference 19, Section 4.5.2.24  
Licensee Submittal: Page XII-3 [27]

Equipment Item No. 121  
Transformer Located in the Turbine Building  
General Electric, 1500/2000 kVA  
4160/480 V Auxiliary Transformer  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 121  
Reference 19, Section 4.3.2.1  
Licensee Submittal: Page XIII-1 [27]

Equipment Item No. 122  
Transformer Located in the Turbine Building  
ITE, 1500/2000 kVA  
4160/480 V Emergency Power Transformer  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 122  
Reference 19, Section 4.3.2.5  
Licensee Submittal: Page XIII-2 [27]

Equipment Item No. 123  
Battery Charger Located in the Turbine Building  
Fansteel Model 4039 Form A  
DC Battery Charging (100(1), 101B(1A), 101C(11A))  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 123  
Reference 19, Section 4.3.2.18  
Licensee Submittal: Page XIV-2 [27]

Equipment Item No. 124  
Motor-Generator Set Located in the Turbine Building  
General Electric Model dc Motor 5C0405E603/  
ac Motor 5K365AK2005V/Generator 5SJ4404A23Y56  
Emergency Power Supply (VAC MG-1)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 124  
Reference 19, Section 4.3.2.19  
Licensee Submittal: Page XIV-5 [27]

Equipment Item No. 125  
Diesel Generator Located in the Diesel Generator Room  
Fairbanks Morse Model 38TD8 1/8 Turbocharged  
4.16-kV Emergency Supply (No. 1)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 125  
Reference 19, Section 4.3.2.20  
Licensee Submittal: Page XIV-4 [27]

Equipment Item No. 126  
Electric Heater Located in the Turbine Building  
Manufacturer and Model Number Not Stated  
SBGT Heater (HVE-5A, B)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 126  
Reference 19, Section 4.3.2.6  
Licensee Submittal: Page IX-2 [27]

Equipment Item No. 127  
Electric Heater Controls Located in the Turbine Building  
Johnson Service Model T-900 Thermostat  
SBGT Heater Control (HVE-5A)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 127  
Reference 19, Section 4.3.2.7  
Licensee Submittal: Page IX-3 [27]

Equipment Item No. 128  
Switchgear Located in the Turbine Building  
General Electric Model NP60844-B  
Emergency Power (4.16-kV Bus Nos. 1, 3, 4, 5, 6, 7)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 128  
Reference 19, Section 4.3.2.21  
Licensee Submittal: Page XII-1 [27]

Equipment Item No. 129  
Switchgear Located in the Turbine Building  
General Electric Model ADK-5  
480 V ac Distribution (480 V Bus 2A, 2)  
Licensee reference not cited  
Required Operating Time: Continuous  
TER Checksheet No. 129  
Reference 19, Section 4.3.2.15  
Licensee Submittal: Page XII-2 [27]

## APPENDIX C - PLANT SAFETY-RELATED SYSTEMS AND DISPLAY INSTRUMENTATION

## C.1 LIST OF SAFETY-RELATED SYSTEMS AND DISPLAY INSTRUMENTS

In accordance with the DOR Guidelines, the Licensee was directed to establish a list of systems and display instrumentation needed to mitigate the consequences of a loss-of-coolant accident (LOCA) or a high energy line break (HELB), inside or outside containment, and reach safe shutdown. The lists of safety-related systems and display instrumentation were developed from a review of plant safety analyses and emergency procedures. The display instrumentation selected includes equipment needed to monitor overall plant performance as well as to monitor performance of the systems on the list. The systems list was established on the basis of the functions that must be performed in order to mitigate the consequences of a LOCA or HELB without regard to location of equipment relative to a potentially hostile environment. The lists of safety-related systems and display instruments to be considered for environmental qualification, as published in Appendix D of the NRC SER [21], follow.

Safe Shutdown Systems

Reactor Protection/Trip System\*  
 Automatic Pressure Relief System\*  
 Feedwater Coolant Injection System\*  
 Emergency Condensate Transfer System\*  
 Low Pressure Coolant Injection/Containment Spray System (Drywell)\*  
 Service Water System (Diesel Generator Cooling)\*  
 Emergency Service Water System\*  
 Gas Turbine Generator (and Associated MCCs, Switchgear, etc.)\*  
 Diesel Generator (and Associated MCCs, Switchgear, etc.)\*  
 480-V Load Centers\*  
 Batteries/Battery Chargers\*  
 125-V dc Distribution\*

\*Required for both safe shutdown and accident mitigation.



Accident Mitigating Systems (LOCA, MSLB, FWLB)

Core Spray System Injection  
 Isolation Condenser System\*  
 Primary Containment Isolation System  
 Standby Gas Treatment System  
 Room Ventilation Coolers (CS, LPCI)  
 Ventilation Systems (Screen House, Turbine Building Switchgear Area,  
 Diesel Generator Room, Gas Turbine Building)\*\*  
 Post-Accident Sampling and Monitoring (Drywell Airborne Radiation -  
 Atmospheric and Hydrogen Monitor)  
 Control Room Ventilation

Accident Mitigating Instruments (LOCA, MSLB, FWLB)

Reactor Vessel Level (wide band lower level, narrow range mid-band level)  
 Reactor Vessel Pressure  
 Torus Water Temperature (24)  
 MSLB Detection Instruments (Steam Flow & Tunnel Temperature)\*\*  
 Main Steam Header Pressure (Low)  
 Reactor Vessel Level (Low, Low-Low, Low-Low-Low)\*\*  
 Drywell Pressure\*\*  
 MSIV Closure/Reactor Trip (Stem-Mounted Limit Switches)\*\*  
 ADS/CS Interlocks (Core Spray)\*\*  
 Torus (Level)\*\*  
 Group 4 Isolation Flow (Isolation Condenser)\*\*  
 Reactor Pressure High (Isolation Condenser Initiation)\*\*

## C.2 LICENSEE RESPONSE TO APPENDIX D OF THE SER

In response to Appendix D of the SER [21], the Licensee provided the following information in Reference 22:

"Appendix D to Reference (43) constituted the Staff's interpretation of a safety-related systems list, and included a safety-related display instrumentation list. NNECO has previously provided the basis for this list for Millstone Unit No. 1 by providing Appendix I to Reference (27), the Master Listing of Electrical Components by System, and Reference (30).

\*Required for both safe shutdown and accident mitigation.

\*\*Required for accident mitigation only.

During the July 7 - 10 meeting, the Staff verbally requested that the list of safety-related display instruments be segregated into two groups. The first group would be the minimum of instruments required to achieve safe shutdown; these therefore require environmental qualification. This listing is provided on the attached sheet, which also indicates the SCEW sheet number associated with that instrument. The second listing addresses those safety-related instruments which are exempt from qualification for the reasons provided.

## LIST 1 - REQUIRES ENVIRONMENTAL QUALIFICATION

<u>Parameter</u>	<u>SCEWS</u>
1. MSLB Detection Instruments (Tunnel Temperature 261-15, 16, 17, 18A-D)	IX-1
2. MSIV Closure/Reactor Trip (Stem Mounted Limit Switches 1-MS-1 & 2A-D)	V-1 & 2
3. Torus Water Temperature (1601-50 & 51's)	IX-6
4. Torus Water Level (LT1630 A & B)	XV-17
5. Reactor Vessel Pressure (263-52C & D, 54 A & B)	XI-1

## LIST 2 - EXEMPT FROM ENVIRONMENTAL QUALIFICATION

Reactor Vessel Level (wide band, narrow band 263-57, 58, 59A & B;  
263-72A-D)

Reactor Vessel Pressure (263-52A, B; 53A, B, C, D; 55A, B, C, D)

Main Steam Header Pressure (Low 261-30A-D)

Group 4 Isolation Flow (Iso-Condenser 1349 & 1350A & B)

ADS/CS Interlocks (Core Spray 1462-A-D)

Reactor Pressure High (Iso-Condenser-Initiation 263-53A-D)

Reactor Vessel Level (Low, Low-Low 263-57 & 58A & B)

These instruments are exempted from qualification because they have been protected by enclosures from the harsh environments as described in the body of the transmittal.

MSLB Detection Instruments (Steam Flow 261-2A-S)

These instruments are exempted from qualification because they are not exposed to the harsh environment which they are required to mitigate, short or long term."

Evaluation

In List 2, the Licensee identifies several safety-related display instruments which are classified as exempt from environmental qualification. One set of instruments (MSLB detection instruments) are not exposed to a harsh environment by the accident they are designed to mitigate. The remaining instruments have been isolated from the harsh environment by special environmental enclosures and therefore are no longer within the scope of this review.

APPENDIX D - REVIEW OF LICENSEE'S RESPONSE TO NRC EEQ  
SER CONCERNING JUSTIFICATION FOR INTERIM OPERATION

## 1. BACKGROUND

The NRC Safety Evaluation Report (SER) concerning equipment environmental qualification (EEQ) states [21]:

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

On January 19, 1982, FRC representatives met with NRC Division of Licensing personnel at NRC offices to discuss the potential for FRC to assist the staff in the technical review of licensees' statements regarding justification for interim plant operation submitted in response to outstanding qualification deficiencies in the NRC EEQ SERs. The results of the meeting were as follows: (1) FRC was requested to proceed immediately with the technical review of licensees' justification for interim operation, (2) the format was established, and (3) the criteria for the review were established. These criteria are presented in Section 2 of this appendix.

On January 21, 1982, the NRC provided FRC with the following modification to Final Assignment 13 concerning this subject:

"The FRC review will consist of:

- o Review the licensee's justification of interim operation and provide FRC independent analysis which shows whether or not licensee provided technically sound rationale as a basis for justification for continued plant operation.

- o On January 27, 1982, FRC shall provide a list of those power reactors that have provided technically sound justification for continued operation. FRC shall also provide a list of those power reactors which have not provided technically sound justification for continued operation. In addition to the lists, FRC may provide any additional information which in FRC's judgment is necessary to support the conclusions regarding justification for continued operation."

On January 25, 1982, FRC provided the NRC with the completed review of the licensees' statements presented as a basis for justification for interim operation in the response to the NRC EEQ SER.\* On February 5, 1982, at the NRC's request, FRC provided the NRC with actual examples of licensees' responses to the NRC EEQ SER that provide adequate rationale as a basis for justification for interim operation.\*\*

## 2. GENERAL DISCUSSION

In general, FRC has observed that licensee-submitted justifications for interim operation are based on systems considerations, equipment operability evaluations, or failure-modes-and-effects analyses.

Systems considerations often involve the availability of backup equipment capable of performing the particular safety function of concern. The backup equipment is either environmentally qualified, unqualified but not exposed to a harsh environment at the same time as the primary equipment, or located so that it is unlikely that both the primary and backup equipment would be simultaneously exposed to a severe environment. In general, these systems discussions should consider (1) the possibility of a single-active failure

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\* C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of FRC Review of Licensees' Responses to NRC EEQ SER Concerning Justification for Interim Operation  
FRC, 25-Jan-82

\*\* C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of Actual Examples of Licensees' Responses to NRC EEQ SER Which Provide Adequate Rationale as a Basis for Justification of Interim Operation  
FRC, 5-Feb-82

disabling the backup equipment, (2) any major differences in the characteristics of the primary and backup equipment (unless it is obvious that the equipment is essentially identical), (3) the possibility of electrical failure of the primary equipment causing an adverse effect on other safety-related equipment or power supplies, and (4) in the case of display instrumentation, the possibility of an operator being misled by the failed primary equipment. Where equipment has not been demonstrated to be qualified, some justifications discuss administrative procedures or revised operating procedures in effect. Depending upon the specific equipment involved, each of the above considerations need not be discussed in every instance, but, in general, a complete systems discussion would consider the above points.

Where equipment qualification evaluations were used, licensees generally (1) received additional information from manufacturers, (2) applied engineering judgment, (3) performed material analysis, and/or (4) used partial test data in support of the original qualification documentation. Where these evaluations were performed, the licensees determined that, although full qualification was not documented, there was sufficient evidence to suggest that the equipment would perform its intended safety function, thereby justifying interim operation until qualified equipment is installed.

Some licensees provided detailed failure-modes-and-effects analyses of electrical circuitry to demonstrate that, under all identified failure modes, the safety function of the equipment could still be accomplished.

Other justifications involved a combination of qualification information and systems information. For example, if a licensee has qualification information (such as a generic test report or other partial qualification documentation) that tends to confirm the ability of the equipment to remain operable for a specified period of time, justification for interim operation often was based upon a discussion of the required safety function being performed prior to the potential failure. This type of discussion often applies to equipment which performs a short-term trip or isolation function in the early stages of an accident.

3. PLANT-SPECIFIC REVIEW

As a result of the FRC review, this plant was evaluated and the results documented on the "Summary of Review of Licensee's 90-Day Response" form reproduced below:

"EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)  
Review of Licensees' Resolution of Outstanding Issues  
From NRC Equipment Environmental Qualification  
Safety Evaluation Reports

SUMMARY OF REVIEW  
OF LICENSEE 90-DAY RESPONSE

Utility: Northeast Nuclear Energy Company  
Plant Name: Millstone Unit 1  
NRC Docket No. 50-245  
NRC TAC No. 42523  
NRC Contract No. NRC-03-79-118  
FRC Project No. C5257  
FRC Assignment No. 13  
FRC Task No. 459

References:

- a. W. G. Council (NNECO)  
Letter to D. G. Eisenhut (NRC)  
Subject: Licensee 90-day Response to NRC Safety Evaluation Report  
Northeast Nuclear Energy Company, 14-Sep-81
- b. Office of Nuclear Reactor Regulation and  
Safety Evaluation Report for Millstone Unit 1;  
Environmental Qualification of Safety-Related  
Electrical Equipment  
USNRC, 10-June-81

The Licensee has submitted technical information in Reference a in response to the NRC SER [b] on environmental qualification. FRC has reviewed these documents [a, b]. As a result of this review, FRC concludes that the Licensee has stated that the equipment items are environmentally qualified; or has provided a technically sound rationale as a basis for justification for continued plant operation; or has provided a technically sound rationale or other additional information which in FRC's judgment provides a basis for justification for continued operation; with the following exceptions:

<u>Equipment Item</u>	<u>Equipment Description/ Function</u>	<u>SCEW Sheet No.</u>	<u>Status Code</u>	<u>Basis for Deficiency</u>
---------------------------	--	---------------------------	--------------------	---------------------------------

None

The Licensee's response to the SER addressed and provided resolution of deficiencies identified in the SER and provided adequate rationale as a basis for justification for interim operation."



APPENDIX E - REQUEST FOR ADDITIONAL INFORMATION

This appendix contains the Request for Additional Information (RAI) that was developed during the course of the review and issued to the NRC for forwarding to the Licensee. The RAI was revised throughout the review to reflect the Licensee's response(s) to the initial RAI.

The reader is cautioned that the numbers in brackets refer to citations found in the list of references at the end of this appendix and not to the citations listed in Section 6, References, of the TER.

APPENDIX E

REQUEST FOR ADDITIONAL INFORMATION

EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)  
REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES  
FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY  
EVALUATION REPORTS (SER) AND TMI ACTION PLAN INSTALLED EQUIPMENT

Northeast Nuclear Energy Company  
Millstone Unit 1

NRC Docket No. 50-245

NRC TAC No. 42523

November 4, 1981  
Rev. 1, February 22, 1982  
Rev. 2, May 17, 1982  
Rev. 3, May 27, 1982

## BACKGROUND

Franklin Research Center (FRC) of Philadelphia, Pa. is providing assistance to the U.S. Nuclear Regulatory Commission (NRC) for the equipment environmental qualification (EEQ) review of operating reactors. FRC will perform an EEQ review of the Licensee's 90-day response to outstanding issues from the NRC Equipment Environmental Qualification Safety Evaluation Report (SER) and the installed TMI Action Plan equipment. The review will be limited to safety-related equipment potentially exposed to a harsh environment. The results will be presented in the form of a technical evaluation report for each plant.

This request for additional information (RAI) is the result of an evaluation of the information provided by letters dated October 31, 1980 [1] and September 14, 1981 [2].\*

In response to the FRC request for information, the Licensee, on February 9, 1982 [5], transmitted the qualification test reports requested by FRC except for Item No. A.1.w (Test Report No. 5K 818841 A 134) which will be sent when received from the General Electric Company and Item Nos. B.2 a, B.2.b, and B.2.c which will be sent when available.<sup>(1)\*\*</sup>

By letter dated October 20, 1981 [6], the Licensee advised NRC that a particular cable was not qualified.<sup>(2)</sup>

Two additional qualification documents not requested were sent.

1. Q-45, Wyle Laboratory Test Report No. 17436-22
2. Q-50, Conax Corporation Test Report No. IPS-618<sup>(1)</sup>

By letter dated April 28, 1981 [7], the Licensee submitted a revised temperature profile for LOCA in containment and SCEW sheets for affected equipment.<sup>(3)</sup>

\*Numbers in brackets refer to citations found in the list of references.

\*\*Throughout the text, superscript numbers in parentheses indicate the revision in which the underlined material preceding the superscript was added.

## A. FRC REVIEW OF THE LICENSEE'S 90-DAY RESPONSE TO THE NRC EEQ SER

## INFORMATION REQUESTED

## DATE RECEIVED BY FRC\*\*\*

1. In reference to the Licensee's 90-day response [2] to the NRC SER [3], a legible single copy of each of the following qualification documents is requested in order that the FRC evaluation may proceed:
- |  |                                   |
|--|-----------------------------------|
| a. Wyle NEQ Report 17436-31, 1/12/81<br>Licensee Ref. Q-41 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| b. Wyle NEQ Report 17436-32, 1/13/81<br>Licensee Ref. Q-30 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| c. Wyle NEQ Report 17436-21, 2/10/81<br>Licensee Ref. Q-31 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| d. Wyle NEQ Report 17436-78, 4/7/81<br>Licensee Ref. Q-32 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| e. Wyle NEQ Report 17436-75, 3/24/81<br>Licensee Ref. Q-33 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| f. Wyle NEQ Report 17436-65, 3/3/81<br>Licensee Ref. Q-34 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| g. Wyle NEQ Report 17436-28, 2/18/81<br>Licensee Ref. Q-35 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| h. Wyle NEQ Report 17436-77, 3/25/81<br>Licensee Ref. Q-36 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| i. Wyle NEQ Report 17436-23, 2/6/81<br>Licensee Ref. Q-46 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| j. Wyle NEQ Report 17436-76, 3/24/81<br>Licensee Ref. Q-37 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| k. Wyle NEQ Report 17436-68, 3/11/81<br>Licensee Ref. Q-40 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |

\*\*\*This column will be completed by FRC as the requested information is received.

## DATE RECEIVED BY FRC\*\*\*

- |  |                                   |
|--|-----------------------------------|
| l. Wyle NEQ Report 17436-74, 3/23/81<br>Licensee Ref. Q-40 [2]   | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| m. Wyle NEQ Report 17436-39, 4/10/81<br>Licensee Ref. Q-38 [2]   | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| n. Wyle NEQ Report 17436-6,9 3/12/81<br>Licensee Ref. Q-39 [2]   | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| o. Limitorque Test Report 600376A, Rev-B,<br>1/23/79<br>Licensee Ref. Q-49 [2]                                 | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| p. Wyle NEQ Report 17436-36, 2/2/81<br>Licensee Ref. Q-44 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| q. Wyle NEQ Report 17436-15, 12/1/80<br>Licensee Ref. Q-42 [2]   | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| r. Wyle NEQ Report 17436-48, 2/3/81<br>Licensee Ref. Q-48 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| s. Wyle NEQ Report 17436-15, 12/1/80<br>Licensee Ref. Q-43 [2]   | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| t. Wyle NEQ Report 17436-20, 11/25/80<br>Licensee Ref. Q-52 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| u. Wyle NEQ Report 17436-19, 11/25/80<br>Licensee Ref. Q-51 [2]  | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| v. GE Topical Report No. 491HA751, 9/15/79,<br>for vertical induction motors, Add. A<br>Licensee Ref. Q-18 [2] | <u>2/17/82 [5]</u> <sup>(1)</sup> |
| w. GE Test Report, Pump Motor<br>Model No. 5K818841A134<br>SCEWS VI-4 [2]                                      |                                   |
| x. Wyle NEQ Report 17436-35, 1/23/81<br>Licensee Ref. Q-47 [2]   | <u>2/17/82 [5]</u> <sup>(1)</sup> |

## B. FRC REVIEW OF INSTALLED TMI ACTION PLAN ITEMS

## INFORMATION REQUESTED

DATE RECEIVED BY FRC\*\*\*

1. Reference 2 does provide adequate detail with respect to identification of TMI Action Plan equipment installed as of 1/1/81.

9/20/81 [2]<sup>(2)</sup>

- a. Identification of all TMI Action Plan equipment installed as of 1/1/81 is requested.

9/20/81 [2]<sup>(2)</sup>

- b. Identification of TMI Action Plan equipment installed with implementation dates after 1/1/81 is requested.

9/20/81 [2]<sup>(2)</sup>

- c. The correlation of these equipment items with the specific sections of NUREG-0737 [4] presented below (as applicable) is requested.

IIE4.2, IID3, IIB3, IIE4.1, IIK3.13,  
IIK3.15, IIK3.19, IIK3.21, IIK3.27.

9/20/81 [2]<sup>(2)</sup>

- d. For all installed TMI Action Plan equipment identified, a System Component Evaluation Worksheet (SCEW) (in accordance with 79-01B format) is requested.

9/20/81 [2]<sup>(2)</sup>

- e. The approximate installation date for the TMI Action Plan equipment items is requested so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.

2. The qualification documents, e.g., the actual test reports and associated correspondence cited as evidence of qualification listed on the SCEW sheets, for all identified TMI Action Plan equipment are requested. [The identification of those reports considered to be proprietary is requested so that proper control of documents can be maintained.]

- a. Babcock & Wilcox test report on Endeveco and Unholtz-Dickie 2273 AM20 Accelerometer (as soon as received) SCEWS XV-15 [2]

DATE RECEIVED BY FRC\*\*\*

- b. Babcock & Wilcox test report on Endeveco and Unholtz-Dickie 3075 M6 cable (as soon as received) SCEWS IV-26 [2]
  - c. Copy of vendor correspondence relating to an anomaly in temperature qualification of Rockbestos Coax Cable RSS-6-104. SCEWS IV-27 [2]
  - d. General Atomic Co. Test Report E-254-960 Rev. 1 dated May 1, 1981. Analog high range radiation monitor Licensee Ref. Q-53 2/17/82 [5]<sup>(1)</sup>
  - e. Rockbestos "Qualification of Firewall III" coax construction cable dated Jan. 18, 1978 (Proprietary) Licensee Ref. Q-54 [2]. 2/17/82 [5]<sup>(1)</sup>
3. Where the Licensee has a standard Owners' Group position with respect to a NUREG-0737 technical area or has requested extensions of implementation dates, this information is requested in order to incorporate it into the review.
- C. INSTRUCTIONS FOR TRANSMITTING INFORMATION REQUESTED
- 1. The schedule for completion of the FRC assignment requires that the Licensee provide the requested information within 3 weeks of the date of the RAI.
  - 2. The Licensee may transmit the requested information as follows:
    - o complete package directly to the NRC project manager
    - or
    - o copy of cover letter to NRC project manager and complete package to FRC.

## REFERENCES

1. W. G. Council (NNECC)  
Letter to D. G. Eisenhut (NRC)  
Subject: Licensee Submittal on Environmental Qualification of  
Electrical Equipment, with Attachments  
Northeast Nuclear Energy Company, 31-Oct-80
2. W. G. Council (NNECO)  
Letter to D. G. Eisenhut (NRC)  
Subject: Licensee 90-day Response to NRC Safety Evaluation Report  
Northeast Nuclear Energy Company, 14-Sep-81
3. Office of Nuclear Reactor Regulation and  
Safety Evaluation Report for Millstone Unit 1;  
Environmental Qualification of Safety-Related  
Electrical Equipment  
USNRC, 10-June-81
4. NUREG-0737, "Clarification of TMI Action Plan Requirements"  
NRC, November 1980
5. W. G. Council  
Letter to D. M. Crutchfield and R. A. Clark, NRC. Subject: Haddam  
Neck Plant, Millstone Nuclear Power Station, Units 1 and 2;  
Transmittal of Information to FRC  
Northeast Utilities, 09-Feb-82  
A02213, A02226<sup>(1)</sup>
6. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear Power  
Station Unit Nos. 1 and 2; NUREG-0737 Item II.F.1.3,  
Containment High Range Radiation Monitor  
Northeast Utilities, 20-Oct-81  
A01379<sup>(2)</sup>
7. W. G. Council  
Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear Power  
Station, Unit No. 1; Environmental Qualification of Electrical  
Equipment; with Attachment  
Northeast Utilities, 28-Apr-82  
B10497<sup>(3)</sup>