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- File

NRC DOCKET NO. 50-245 NRC TAC NO. 42523 NRC CONTRACT NO. NRC-03-79-118

FRC PROJECT C5257 FRC ASSIGNMENT 13 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.

Principal contributors to the technical preparation of this report were C. J. Crane, J. A. Murphy, K. E. Weise, D. J. Schmitz, and K. J. Iepson of the Franklin Research Center.

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. IN TRODUCT ION

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 harst 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 evalur e 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.

*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 Licenses 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
- 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
- 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.

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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,

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"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 safetyrelated 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

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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 licensces 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 specifielectrical 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].

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(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 safetyrelated 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.

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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

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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 Bull tin 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 79-018. 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 79-018. 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.

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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 safetyrelated 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 fek (SECY-81-486) to extend the deadline for actions to be taken by licensees to SEK achieve environmental qualification of all safety-telated equipment. On well September 30, 1981, the NRC Commissioners extended this deadline to the second refueling outage after March 31, 1982.

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.

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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.
 - The requirement to qualify equipment needed to complete one path of achieving and maintaining a cold shutdown condition has been deleted.
- A new section has been added, covering the qualification of equipment located in mild environments.
 - 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

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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:

- DOR Guidelines, "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors," November 1979 [15]
- 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:

- IE Bulletin 79-01B, "Environmental Qualification of Class IE 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 safetyrelated 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),



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near term operating license applicants (NTOLs), and construction permit applicancs (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		CPs			
	CP SER	CP SER			
DOR GUIDELINES	Before 7/1/74	After 7/1/74			
USE NUREG-0588 AS NECESSARY	NUREG-0588 (CAT. II)	NUREG-0588 (CAT. I)	NUREG-0588 (CAT. I) or NEW RULE WHEN		

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

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'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:

- 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.

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

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2.2.4.3 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:

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

*The numbers in parentheses represent % noble gases/% iodine/% particulates. RCS means reactor coolant system. Gamma equivalents may be used when consideration of the contibutions 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 activities¹ 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:
 - 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.

¹Such 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).

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 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 <u>all</u> 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:

- 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.
- 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.
- Replacement equipment qualified to NUREG-0588, Category I standards would require significant plant modifica ions to accommodate its use.
- 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 x 10⁷ 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°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
Т	-	Temperature	I	-	HELB Evaluation Outside
QT	-	Qualification Time			Containment Not Completed
RT	-	Required Time	QM	-	Qualification Method
P	-	Pressure	RPN	-	Equipment Relocation or Replacement,
Н	-	Humidity			Adequate Schedule Not Provided
CS	-	Chemical Spray	EXN	-	Exempted Equipment Justification
A	-	Material Aging Evaluation,			Inadequate
		Replacement Schedule, Ongoing	SEN	-	Separate Effects Qualification
		Equipment Surveillance			Justification Inadequate
S	-	Submergence	QI	-	Qualification Information Being
(R)	-	Licensee has committed			Developed
		to replace equipment	RPS	-	Equipment Relocation or Replacement Schedule Provided

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

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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 MRC were used to determine the relative completeness of the Licensee's submittals:

- Determine whether the Licensee provided specific responses to the SER concerns.
- Determine whether the Licensee proposed corrective actions and a schedule for completion of the actions.
- 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.
- Determine whether the License's System Component Evaluation Work Sheets (SCEWS) were updated to correct deficiencies and add supplemental information.
- Determine whether the Licensee provided justifications for interim operation for all unqualified equipment.
- 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

*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
- 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 recionale concerning exemption of equipment from qualification.

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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 safetyrelated 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/1-1-8.) 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)

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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,

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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:

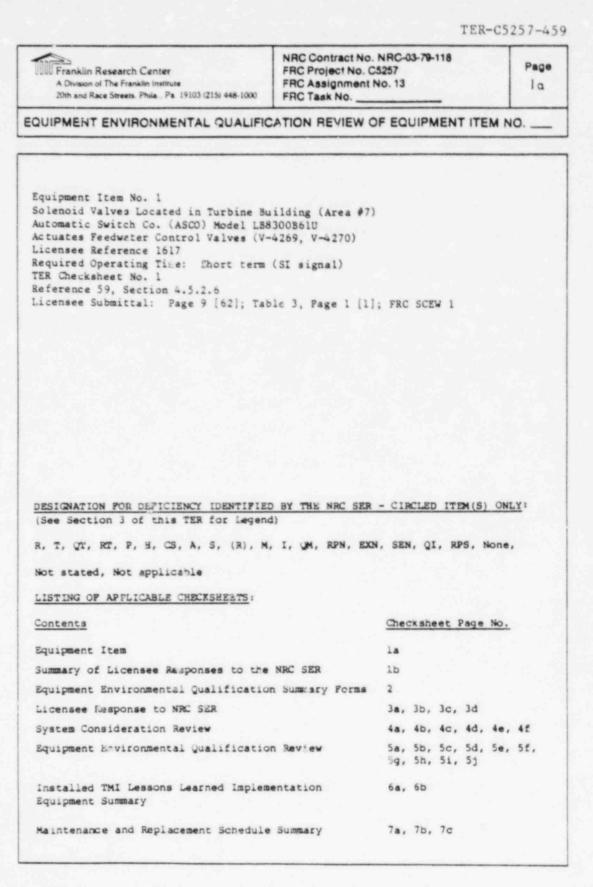
o Equipment item information (see Figure 3-1), for example:

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
- Evaluation of qualification including identification of all deficiencies
- Evaluation of system considerations presented by the Lilensee 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

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Figure 3-1. Sample Checksheet Page la

"Equipment Item"

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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

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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

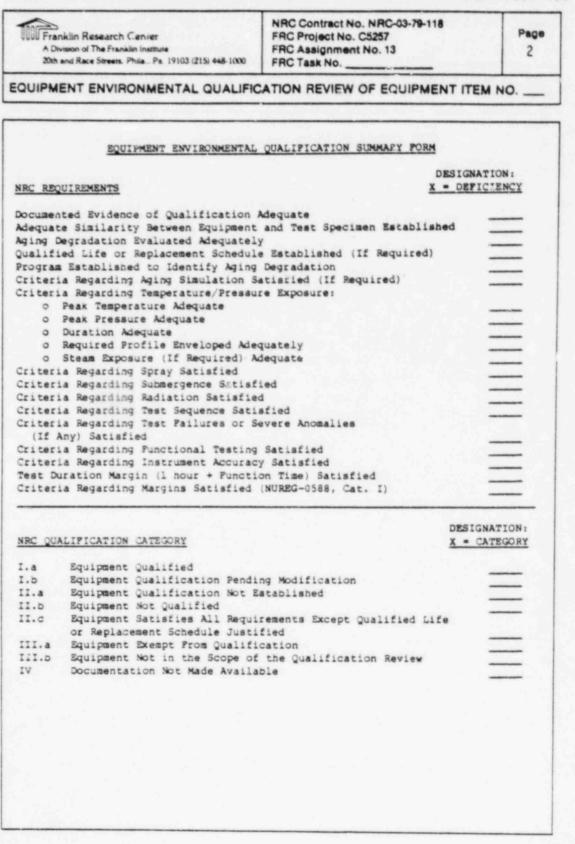


Figure 3-2. Sample Checksheet Page 2

"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).

NRC Category II.b
 EQUIPMENT THAT IS UNQUALIFIED

This category includes equipment items whose qualification documentation has been judged to be seriously deticient 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 intepreted 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.]

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 safetyrelated 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.

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4.2 SUMMARY OF THE EVALUATION

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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.

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TABLE 4-1

NUMBER OF EQUIPMENT ITEMS IN EACH QUALIFICATION CATEGORY

NEC	Y DESCRIPTION	GUNBER OF EQUIPMENT ITENS
I.A	EQUIPHENT QUALIFIED I EQUIPHENT ITEM ND(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 1	3U
I.B	EQUIPMENT QUALIFICATION PENDING MODIFICATION	21
II.A	EQUIPMENT QUALIFICATION NOT ESTABLISHED [EQUIPMENT ITEM ND(S).: 2, 3, 15, 23, 25, 31, 75, 77,111,112,113]	11
II.B	EQUIPMENT NOT QUALIFIED	v
11.C		
11.0	EQUIPMENT SATISFIES ALL REQUIREMENTS EXCF T QUALIFIED LIFE OF REPLACEMENT SCHEDULE JUSTIFIED I EQUIPMENT ITEM NO(S).: 1, 5, 24, 26, 28, 29, 120,120]	- 7
111.4	EQUIPMENT EXEMPT FROM QUALIFICATION	0
III.8	EQUIPMENT NOT IN THE SCOPE OF THE REVIEW- [EOUIPMENT ITEM ND(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]	41
IV.	DOCUMENTATION NOT MADE AVAILABLE	0
	TOTAL	129

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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]	
2. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN ESTABLISHED I EQUIPMENT ITEM NO(S).: 31, 70, 75, 76, 77,112, 113,113 1	- 7
3. AGING DEGRADATION EVALUATED ADEQUATELY- [EQUIPMENT ITEM NO(S).: 7, 24, 26, 31, 70, 76, 77, 77]	- 7
1. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF PEQUIRED) [EQUIPMENT ITEM ND(S).: 1, 5, 5, 7, 24, 26, 28, 29, 31, 70, 76, 77]	- 12
5. PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION L EQUIPMENT ITEM NO(S).: 70, 76 B	- 2
6. CRITERIA REGARDING AGING SIMULATION (IF REQUIRED) L EQUIPMENT ITEM NO(S).: 77]	- 1
 7. CRITERIA REGARDING TEMPERATURE/PRESSURE EXPUSURE: A. = PEAK TEMPERATURE ADEQUATE	- 1
H PEAK PRESSURE ADEQUATE	- 0
C DURATION ADEQUATE	- 0
D REQUIRED PROFILE ENVELOPED ADEQUATELY [EQUIPMENT ITEM NO(S).: 76 J	- 1

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Table 4-2 (Cont.)

QUALIFICATION DEFICIENCY SUMMARY

		NHC REQUIREMENT	NUMBER OF OEFICIEN1 EQUIPMENT ITEMS
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		E STEAM EXPOSURE (IF REQUIPED) ADEQUATE L EQUIPMENT ITEM NO(S).: 76 1	1
	8.	CRITEFIA REGARDING SPRAY SATISFIED	
	9.	CRITEPIA REGARDING SUBMERGENCE SATISFIED	0
	10.	CRITERIA REGARDING RADIATION SATISFIED	6
	11.	CRITERIA REGARDING TEST SEQUENCE SATISFIED	0
	12.	CRITERIA REGARDING TEST FAILURES ON SEVERE ANOMALIES (IF ANY) SATISFIED	0
	13.	CRITERIA REGARDING FUNCTIO AL TESTING SATISFIED	0
	14.	CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED	5
	15.	TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED	0
	16.	CRITERIA FFGARDING MARGINS SATISFIED (NUREG-0588, CAT. 1)-	0
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TABLE 4-3

LICENSEE CURRECTIVE ACTION SUMMARY

 EQUIPMENT RELOCATION ABOVE SUBMERGENCE LEVEL RELOCATE OR SHIELD ROUIPMENT FROM RADIATION SOURCE 	R OF MENT AS
 EQUIPMENT FELOCATION ABOVE SUBMERGENCE LEVEL FELOCATE OR SHIELD EQUIPMENT FROM RADIATION SOURCE 	\$
4. RELOCATE OR SHIELD FOUIPMENT FROM RADIATION SOURCE	0
	o l
E UPDICY OUNITEICATION OF ADDITIONAL TECTUCIANAL VELO	0
5. VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS	0
6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT	0
7. QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS	2
8. OTHER (FOR DETAILED DESCRIPTION SEE SPECIFIC EQUIPMENT ITEMS) 1 [EQUIPMENT ITEM ND(S).: 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 72]	4
SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED (SEE SPECIFIC EQUIPMENT ITEM FOR COMPLETION DATE)	6

Table 4-4

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FOUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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	C REQUIREMENTS (DESIGNATION: X = DEFICIENCY)	1	1	1	1	1	1	1	1	1	1	1	8 1	1	1	1
		4	1	1	1	1	1	1	1	4	1	1	1 1	1		1
	. DOCUMENTED EVIDENCE OF GUALIFICATION ADEGUATE	1	1 X	X 1	1 X	1	1	1	1	1		1		. 1		1 *
	TEST SPECIMEN ESTABLISHED AGING DEGRADATION EVALUETED ADEQUATELY		1	1	1	1	1	i x	1	1		1		1		1
1 .	ESTABLISHED (IF REQUIRED)	1 x 1		1	:	x				1				1	1	
1 6.	. PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REGUIRED) CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:	-1		1	1				1					1	1	
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1	8 PEAK PRESSURE ADEQUATE				1	i .										
4	C DUPATION ADEQUATE			Î.	i -	1	1		1				i	i		
1	D REQUIRED PROFILE ENVELOPED ADEQUATELY		£	1	1	1	1	1	1	1 1	1	1	1	1	1	1
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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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		COF QUALIFICATION ADEGUAT RETWEEN EQUIPHENT AND			1	1.1	1.1	. ^					: :	:		1.1	
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· •		VALUATED ADEQUATELY			:	1	1	10.0						1	· .	- 1	1.
		REPLACEMENT SCHEDULE			:		÷ .	1.1			- 7			1		- i -	
		UIRED) ===============		-1		i	i - 1	i 1			1			- i	i	1	i
		TO IDENTIFY AGING DEGRAM			1	1	1	1	1		1		1	i	i.	i.	i
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1.2		PERATURE ADEQUATE		-1	1	2	1	1	1	1 1	1		1 1	1	1	1	1
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8.	CRITERIA REGARDING	SPPAY SATISFIED	**********************	- 1	1	1	1	1	1	1 1	1		1 1	1	1	1	1
9.	CRITERIA REGARDING	SUEMERGENCE SATISFIED	*********************	-1	1	1	1	:	1	1	1.3		1 1	1	1	1	1
10.	CRITERIA REGARDING	RADIATION SATISFIFD		- :	1.	1	1	1	1	5	1		1 1	1	4	1	1
11.	CRITERIA PEGARDING	TEST SEQUENCE SATISFIED-		-1	1	1	1	1	1	8 I I I			1 1	1	1	1	1
12.	CRITERIA REGARDING	TEST FAILURES OR SEVERE	ANOMALIES	1	1	1	1	1	1	1			1 1	1		1	1
	(IF ANY) SATIS	FIEDeeeeeeeeeeeeeee	***************************************	- 1	2	1	÷	1	4	1			1 1	1	1	1	
13.	CRITERIA REGARDING	FUNCTIONAL TESTING SATIS	FIEDesessessessesses	-:	8 I I I		1	8 C -		1			1 1				
14.	CRITERIA REGARDING	INSTRUMENT ACCURACY SATI	SFIEL	-1	ŧ.,	÷ .		1	1								
1 15.	TEST DURATION MARG	IN (1 HOUR + FUNCTION TIM	E) SATISFIED======	- :			1	5									
16.	CRITERIA REGARDING	MARGINS SATISFIED (NUREG-	-0588, CAT. 1)	-:	1	1		1		1			1 1		1		
100.000	QUALIFICATION CATE		# CATEGORI)	1	1	: .	:	1	:	:					-	- 1	1
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1./	A EQUIPMENT QUAL		***********************		2.0	1 .	i x	1 .	: .	: .			: :	1		- ÷	
1.1	B EQUIPMENT QUAL	IFICATION PENDING MUDIFIC	ATIONSCREESSON	-1 /	1	: *	: *	: *	: ^	: *		:	: :	:	:	1	- 1
11.		IFICATION NOT ESTAPLISHED			2	÷ .	1	2	:	:		:	: :		- :		- 2 -
11.		DUALIFIED		T	1	:	:	:	:	:			: :		:		:
11.		SFIES ALL REQUIREMENTS EXI			1.	1	1	1	:	:		:	: :			÷.	1
		OR REPLACEMENT SCHEDULE .			1	:	:	:	:	:		:	: :		- 1		- 2
111		PT FROM QUALIFICATION			÷	:	:	:	:	:		1.4			× 1		c 3 a
2007		THE SCOPE OF THE REVIEW			1	÷ .	:	:	÷	1	^		1 1	· · ·	- î	111	11
IV																	
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LURI		** ***** *****************************	******************		1	1	î.	i	1	1		î -	2	- î		1	- 1
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		ON ABOVE THE SUBMEPGENCE			i i	1	i .	1	i	i	2	8	i i	1	1	1	1
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		IFIC EQUIPMENT ITEM IF CHI			1	1	1	1	1	1	1	5	1 1	1	1	1	4
	the second second			1	1	1	1	t	1	1	1	1	1 1	1	1	1	1
		the set of the second s	A LOW DESIGNATION AND ADDRESS OF ADDRESS	- 1 W		6 14	1 V	1 1		* *		£					
SCE	FOULT FOR COMPLETIO	ON OF CORRECTIVE ACTION(S)	3 NAS DEFU PROVIDED	-1 -	*	2 8	* *		5 8	5 4		¥	* *				

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	1			FRO	E EQU	IPKE	NT I	TEM			****	****		
	1061	062106												10751
I NEC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)	1 1	1 1	1	1	1	1	1	1	1	1	1	1	1	1 1
	1 1	1 1	1	1	1	1	1	i	1	1		i .	i .	i i
1 1. DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE	1	i i i	1 8	1	1	1	i	i	1		I X	i x	i x	ii
1 2. ADEQUATE SIMILARITY BETWEEN EQUIPHENT AND	1 1	1	1	1	1	1	1	i	i		1 1		1	i i
I TEST SPECIMEN ESTABLISHED		1	1	1	1	i i	Î.	i	i x	1	ii	i 1		ixi
1 3. AGING DEGRADATION EVALUATED ADEQUATELY	!	1.	1	1	1	1	i	i	i x i	5	1 1	i 1	i	1 1
1 4. QUALIFIED LIFE OR REPLACEMENT SCHEDULE	4 1	1	1	1	1	1	1	î.	1	1	1 1	1	i i	1 1
I ESTABLISHED (IF REGUIRED)		1	1	1	1	1	1	1	1 X 1	1	1	1 1	1	1 1
1 5. FROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION		1	1	1	1	1	1	1	1 X 1	1 1	1 1	1	1	1 1
1 6. CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)	1 1	1	1	1	1	1	1	1	1 1	1	1 1	1 1	1	1 1
1 7. CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE:	1 1	. 1	1	1	1	1	1	1	1	1	1 1	1 1	1	1 1
A PEAK TEMPERATURE ADEQUATE		1	1	1	1	1	1	1	1	1	1 1	1	1	1 1
B. = PEAK PRESSURE ADEQUATE		1	2	1	1	1	1	1	1 1	1 1	1 1	1 1		1
I C. * DURATION ADEQUATE************************************		1 .	1	1	1	1	1	1	1	1 1	1 1	1 1	1	1 1
I D REQUIRED PROFILE ENVELOPED ADEQUATELY		1	1	1	1	1 3	1	1	1 1		1 1	1 1	1	1 1
E STEAM EXPOSURE (IF REGUINED) ADEQUATE		- 4	1	1	1	1	1	1	1	5 1	1 1	1 1	8	1 1
1. 8. CRITERIA REGARDING SPRAY SATISFIED		1	1	1	1	1	1	1	1	1	1 1	1 .	1	1 1
9. CRITERIA REGARDING SUBMERGENCE SATISFIFD		4	1	1	4	1 3	1	1	1	1	1 1	1 1	1	1 1
1 10. CRITERIA REGARDING RADIATION SATISFIED			1	1	1	1	1	1	1 1	1	1 1	1 1	1	1 1
1 11. CRITERIA REGARDING TEST SEQUENCE SATISFIED	! !	1	1	1	1	1	1	1	1 4		: :	1 1	1	1 1
1 12. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES	1 1	4	1	1	1	1 1	1	1	1 1	1 1	1 1	1 1	1	1 1
(IF ANY) SATISFIED		1	1	1	1	1 1	1	1	1 1	1 1	1 1	1 1	1	1 1
1 1). CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED				1	1	1	:	1 .)	1 . 1		1 1	1 1	1 I	1 1
14. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED			1	1	1	1	1	1	1 1	1 1	1 1	1 1	1.	1 1
1 15. TEST DURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED		1	1	1	1	1 1	1	1	1 1	1 1	1 1	1 1	()	1 1
1 16. CRITERIA REGARDING MARGINS SATISFIED (NUREG-0508, CAT. 1)		1	1	1	1 1	1		8 4	1 1	1	1 1	1 1	E. 3	1 1
NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)				1	1 1	1 1		1	1 1		1 1	1.1	1	1 1
				1	1 1	1		1	1 1		1 1	h (1	. J	1 1
I.A EQUIPMENT QUALIFIED			1	1	1	1 1	1	1						1 1
I I.B EQUIPMENT QUALIFICATION PENDING MODIFICATION			1 X	5	1		1	1			1 X 1	X	X	1 1
I II.B EQUIPMENT NOT QUALIFIED			1.	:	:									
			1										8 1	1 1
I II.C EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT 1 QUALIFIED LIFE OR REPLACEMENT SCHEDULE JUSTIFIED			1	:	1		:							
I III.A EQUIPMENT EXEMPT FROM QUALIFICATION			:	:	1	: :								1 1
I III.B EQUIPMENT NOT IN THE SCOPE OF THE REVIEW			1	: .	1 . 1			1						
IV DOCUMENTATION NOT NADE AVAILABLE			1	1 X										1 1
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1 CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIE)													EBRI	*****
CORRECTOR SCIENCE STREET				;										
1. EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT		;	ix											
1 2. EQUIPMENT MODIFICATION			: ^	1	: :									
1 3. EQUIPMENT RELOCATION ABOVE THE SUBMERGENCE LEVEL		:	:	;										
4. RELUCATE OR SHIELD EQUIPMENT FROM RATIATION SOURCE		;	1	:										
1 5. VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS			:	;										1
6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT		;	:	:							2			1
1 7. GUALIFICATION TESTING OF EQUIPMENT IN PROGRESS		:	:	:									1	
1 8. OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED			:							1		XI		
	! !	-	1	1			1.00				XI	1.1		
SCHEDULE FOR COMPLETION OF CORRECTIVE ACTION(S) HAS BEEN PROVIDED	1 1	1	1.	1.								x	x	

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EGUIPHENT ENVIRONMENTAL GUALIFICATION SUMMARY FORM

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NRC RE	QUIREMENTS	(DESIGNATION: X .	DEFICIENCY)	1	1	1	1	1	1									1
1. DO	CUMENTED EVIDENCE	OF QUALIFICATION ADEQUATE		-i x	i x		1				1	xi	x	xi	x	x		i i
		BETWEEN EQUIPHENT AND		1	1		1 1	1 1		1 1	1	1		1				1
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		ALUATED ADEQUATELY		-1 X	! X	1	1 1	1 1	1	1 1		1						1
		PLACEMENT SCHEDULE		1	1	1	1											1
		IRED)																1
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		RATURE ADEQUATE		- 1	1	1	1	1	1	1 1	X		: 1	1	111	1 3	1	1
		URE ADEQUATE			1	1	1	1	1	1 1								1
		DEQUATE			5	1												£.,
	D REQUIRED P	ROFILE ENVELOPED ADEQUATE SUFF (IF REQUIRED) ADEQUA		-1 X	÷ .		1	1										1
8 68		PRAY SATISFIED			i .	i	1	i i	1	1 1						i (î.
		UBMERGENCE SATISFIED			1	1	1	1	1	1 1			1 1					1
		ADIATION SATISFIED			: X	1	1	1	1	4 3	X	1	1 1	1. 1		1	1	1
11. CR	ITERIA REGARDING T	EST SEQUENCE SATISFIED		- 1	1	1	1	1	1	1 1			1 1			1	1	1
12. CR		EST FAILURES OF SEVERE AN		1	1	1	1 - I	1		1								1
		ED			1		1.1		1									1
		UNCTIONAL TESTING SATISFI NSTRUMENT ACCURACY SATISF			2		î	1	;									ĩ
		(1 HOUR + FUNCTION TIME)			i.	1	i i	1	1	1 1						i i	i 1	î.
		ARGINS SATISFIED (NUREG=0	588, CAT. 1)	-1	1	1	1	1	1	1 1	1		1 1	1 1		t	£	1
	*****************																	**
NRC QU	ALIFICATION CATEGO	RY (DESIGNATION: X =	CATEGOPY)	1.1	1	1	1											1
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I.A I.0		ICATION PENDING MODIFICAT		-1 8	i .	i	1 7	1	1	1	x	x	i x i	x		x	1	î
II.A		ICATION NOT FSTABLISHED			1.4	1	1	1	÷	1 1			1			1	1	t
II.F		ALIFIED		-1	1	:	1	1		1 1		£ .	1	1 1	1	1	1	1
II.C		TES ALL REQUIPEMENTS EXCE		1	1	1	1	1	1	1 1			1			1	1	1
		P REPLACEMENT SCHEDULE JU			1	1	1	1.00	1									1
III.A		FROM GUALIFICATION			1		1	3										1
III.8		T MADE AVAILABLE		-1	1	1	i	1	i	1						1	i	i

CORRECT	TIVE ACTION SPECIF	IED (DESIGNATION: X =	ACTION SPECIFIED)	1	1	:	1	1	1	8 8	1	1 1	1 1	1 1	1	1 1	1	1
	*****************		***************	1	1	:	1	1	1	1 1		. 1	1					1
		T WITH QUALIFIED EQUIPMEN			1		1											1
		ABOVE THE SUBMERGENCE LE					:	:										1
		QUIPMENT FROM RADIATION S				-	1	1		1								i
		BY ADDITIONAL TESTING/AN			1	1	1	1	1	1 1				1		1		1
0. E01	UIPMENT RELOCATION	TO A MILD ENVIRONMENT		-1	1	2	1	1 1	1 1	1 1	- 1	1 1	1 1	1	- 4	1 1	1	1
		G OF EQUIPMENT IN PROGRES			1	1	1	1		1 1			1					1
8. OTH	HER (SEE SPECIF	IC EQUIPMENT ITER IF CHEC	¥£()===)==========				-											4
	ULE FUR CONDUCTION	OF CORRECTIVE ACTION(5)	HAS HEEN PROVIDE	-1 -			1				x	x					6	1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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	2488	100													
	1091	E B B B	109	31094		1040	1097		1033	11001	101	1102	1103	104	105
I NRC REQUIREMENTS (DESIGNATION: X = DEFICIENCY)	1	1	1	1	1	1	1			1 1		1			
1	2	2	÷	÷	1	1						:			
1 1. DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE	i x	÷ .	÷ .	i.	1							:	: :		1
1 2. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND	1	R	1	÷	÷	1	: .	1.1		: :		:	: :		
1 TEST SPECIMEN ESTABLISHED	1	î.	1	i .	1	1	1 3			: ;			: :		£
1 3. AGING DEGRADATION EVALUATED ADEQUATELY	i	1	i	1	÷ .	1	1								1.1
1 4. OUALIFIED LIFE OR REPLACEMENT SCHEDULE	1	î.	î.	1.	1	i	i - 1			i i			i i		£
I ESTABLISHED (IF REQUIRED)	2	4	1	1	1	1	1			1 1		1	i i		i
1 5. PROGRAM ESTABLISHED TO IDENTIFY AGING DEGRADATION	1	1	1	1	1	â - 11	1	1 1		5 1		1	1 1		È.
1 6. CRITERIA REGARDING AGING SIMULATION SATISFIED (IF REQUIRED)	1	1	1	1	1	1	1 1			1 1		1	1 1		£
1 7. CRITERIA REGARDING TEMPERATURE/PRESSURE EXPOSURE1	1	1	\$	1	1	1	1	1. 1	1	1 1		1	1 1		i -
A PEAK TEMPERATURE ADEGUATE	1	1	1	1	1	1	1 1	1 1	t 1	1 1		1	1 1	1 1	£
B PEAK PRESSURE ADEQUATE		1	1	1	5	1	1 1	1 1	1 1	1 1		£ 1	1 1	1 1	£
C DURATION ADEQUATE	1	2	1	1	1	1	1	1 1	1 1	1 1		1	1 1	1 1	10.1
I D REQUIRED PROFILE ENVELOPED ADEQUATELY		1	1	1	1	1	1	1 1	ι. ι	1 1	1	1	1 1	1 1	k
E. = STEAM EXPOSURE (IF REQUIRED) ADEQUATE====================================		1	4	1	1	1	1	1 1	1 J	1 1	1 1	1	1 1	1 1	£
1 8. CRITERIA REGARDING SPRAY SATISFIED		2	1	1	1	1	1	1 1		1 1		1	1 1	1 1	£
1 9. CHITERIA REGARDING SUGMERGENCE SATISFIFU		1	1	1	1	\$	4	1 1		1 1		1	1 1	1 1	£
1 10. CRITERIA REGARDING RADIATION SATISFIED		4	£	1	1	1	1	1 1	0.0	1 1	1.1.1	1	1	: :	4
1 11. CRITERIA REGARDING TEST SEGUENCE SATISFIED	1	1	1	1	1	1	1	1 1		1 1		1	1 1	1 1	£
1 12. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES	4	1	8	1	1	1	1	1 1	1 1	1 1		1	2 1	1 1	£
1 (IF ANY) SATISFIED		1	81	÷		1	1 1			1 1		1	1 1		£
1 13. CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED		1	÷ .	1	1	1	1			1 1		1	1 1		
1 14, CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED		2	÷.,	2		<u>81</u>	1						1 1		
1 15. TEST OURATION MARGIN (1 HOUR + FUNCTION TIME) SATISFIED		÷	÷	2	:	1									£
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I NRC QUALIFICATION CATEGORY (DESIGNATION: X = CATEGORY)		4		1	1	1									
	6	1	1	1	î	i									£
1.A EQUIPMENT OUALIFIED	1	i x	i x	i x	i x	1 8									2
1 I.B EQUIPMENT GUALIFICATION PENDING MODIFICATION		1	1 1	1	1	1									1
1 11.4 EQUIPMENT QUALIFICATION NOT ESTABLISHED	1	1	1	1	1	1	1			i i		1	i i		£
I II.B EQUIPMENT NOT QUALIFIED	1	1	1	1	1	1	1 1	1 1	1 1	1 1		1	1 1	1 1	i
1 11.C EQUIPMENT SATISFIES ALL REQUIREMENTS EXCEPT	2	1	1	1	1	1	2	1 1		1 1		1	1		£
1 GUALIFIED LIFE OF REPLACEMENT SCHEDULE JUSTIFIED	1	1	1	1	1	1	1	1 1	1	1 1		1	1	1 1	£
1 III.A EQUIPHENT EXEMPT FROM GUALIFICATION	1	1	1	1	1	1	:	1 1	1	1 1	1	1	1 1	1 1	£
I III.B EQUIPHENT NOT IN THE SCOPE OF THE REVIEW	1	1	1	1	1	1	1 1	1 1	1	1 1	1.1	1	1 1	1 1	1 8
I IV DOCUMENTATION NOT MADE AVAILABLE	1	1	1	1	2	1	1	1 1	1 1	1 1	1	1 1	1 1	1 1	4
第二次自认当年上年年 过第三处元平等法国和市口建立局面下口市建筑公司部务兼任的主要兼自任的非常常有不可能专用等的改造印刷中部中的中的现在分子中															
1 CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED)	4	3	1	1	1	1	1)	i. 1	E. 1	1 1	1	1 1	1 1	t 4	1
	1	1	1	1	1	1	1 1	1 1	l	: 1	1.1	1 3	1 1	1 1	£
1 1. EQUIPMENT REPLACEMENT WITH QUALIFIFD EQUIPMENT		1	1	1	2	1	: :	1 1	1 1	t 1		: :	1 1	1 1	1
1 2. EQUIPMENT MODIFICATION		1	1	1	1	£	1 1	1 1	1 1	1 1	(I	E 1	E 1	1	£.
1 3. EQUIPMENT RELOCATION ABOVE THE SUBPERGENCE LEVEL		1	1	2	ŧ	1	1 1	1	1.1	1 1		: :	1 1	: 1	£
4. RELOCATE OR SHIELD EQUIPMENT FROM FADIATION SOURCE		1	1	1	1	1	1 1	1	1	1 1	1	1 1	1 1	1	1
1 5. VERIFY QUALIFICATION BY ADDITIONAL TESTING/ANALYSIS		1	1	1	1	1	1 1	1	1	1 1		1	1 1	1	
		1	1	1	1	:	1 1	1	1	1 1		1	1 1	1	1.11
1 6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT															
1 7. GUALIFICATION TESTING OF EQUIPMENT IN PROGRESS		÷		21.1							- 2				
		1	1	1	i			1		i	1			1	
1 7. GUALIFICATION TESTING OF EQUIPMENT IN PROGRESS		1		1	1									1	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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NRC REQUIREMENTS (DESIGNATION1 X = DEFICIENCY)	
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(IF ANY) SATISFIED 13. CHITERIA REGARDING FUNCTIONAL TESTING SATISFIED 14. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED 15. TEST DURATION WARGIN (1 HOUR + FUNCTION TIME) SATISFIED 16. CRITERIA REGARDING WARGINS SATISFIED (NUREG-0586, CAT. 1) NRC QUALIFICATION CATEGORY (DESIGNATION: X * CATEGORY)	
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CORRECTIVE ACTION SPECIFIED (DESIGNATION: X = ACTION SPECIFIED) 1. EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT 2. EQUIPMENT REPLACEMENT WITH QUALIFIED EQUIPMENT 3. EQUIPMENT RELOCATION ABOVE THE SUBAPERGENCE LEVEL 4. RELOCATE OR SHIELD EQUIPMENT FROM HAPIATION SOURCE- 5. VERIFY QUALIFICATION AN ADDITIONAL TESTING/WHALVSIS- 6. EQUIPMENT RELOCATION TO A MILD ENVIRONMENT- 7. QUALIFICATION TESTING OF EQUIPMENT IN PROGRESS- 8. OTHER (SEE SPECIFIC EQUIPMENT ITEM IF CHECKED)- SCHEDULF FOP CUMPLETION OF CORRECTIVE ACTION(S) HAS PEEN PROVIDED	

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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:

- 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.
- 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

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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

ITEM

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- 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.
- 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.
- 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.

1. Generator (main, diesel, gas turbine)

- a. Brush rigging, slip rings, amplidyne, etc. Maintenance
- Bypot, regulator testing and maintenance, Production Test relaying
- 2. Motor testing (all motors up to 4KV)
- 3. Protective relay calibration and trip testing
- 4. Transformer Testing
 - a. Inside transformers
 - b. Outside transformers
- Emergency/Vital Power Systems includes inverters, DG electrical controls, G/T electrical controls and battery chargers
- 6. Plant power metering calibraton
- 7. Transducer calibration

Maintenance

Production Test

Maintenance

LEAD RESPONSIBILITY

Production Test

Maintenance

Production Test

LEAD RESPONSIBILITY

Maintenance

Maintenance

Production Test

Maintenance

Maintenance

Production Test

Maintenance

Maintenance Production Test Maintenance I & C

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

MAINTENANCE DEPARTMENT

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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

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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.

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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)

Generic Equipment	Surveillance (Preventive Maintenance)	Period
- KV Motors	IR Test Hi-Pot lest	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 verif assumptions used in aging analysis.	У
Limit Switches	Visual Inspection Replace gaskets	Two (2) years Two (2) years
Cable and Terminations		
4 KV Power	IR Test Hi-Pot Test	Each refueling Each refueling
Cable and Terminations		
LV Power Control Instrumentation	Visual Inspection	Ten (10) years
Penetrations	Leak Rate IR Test	Each refueling Ten (10) years

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ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

TABLE 1 (CONT.)

Generic Equipment	Surveillance (Preventive Maintenance)	Period
Misc. Terminations	IR Test	Ten (10) years
(See Note 4)	Visual Inspection	Ten (10) years

Instrumentation

Calibration Runs

Each Refueling

Transmitters Radiation Detector Accelerometer Pre-Amp Pressure Switches RTD's Flow and Level Switches Relays

NOTES

Note 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.
- A new Ventilation System will be provided for the Emergency Diesel Generator Room which will protect the Emergency Diesel Generator from a hostile environment.
- 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.
- Seismic enclosures will be installed to isolate from the hostile environment the following instrument racks: 2205, 2206, 2257, 2201A, and 2201B.

 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

- 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.
- 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

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

ELECTRICAL

Category 1E Design

 All Category IE 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 IE Equipment for Nuclear Power Generating Stations.
IEEE-384-1977	-,	Standard Criteria for Independence of Class lE Equipment and Circuits

Non-Category IE Design

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 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

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Structural modifications are designed in accordance with the following criteria:

- 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.
- Loading conditions are combined to give the worst case combination of dead load, live load, pressure, earthquake and wind load where applicable.

- 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.
- All drilled in concrete anchors are Hilti Qwik Bolts designed in accordance with the Hilti manual with a factor of safety of 4.0.
- 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 x 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 Licensée 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 alledged 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 alledge! 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:

LOCA	Temperature	Pressure	Humidity
	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 nonconservative 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 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 token 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

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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].



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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.



: EQUIPMENT ENVIRONMENTAL QUALIFICATION : EQUIPMENT ITEM CHECKSHEET INDEX

200 AB (10 A (10) A (10			
COMPONENT	MANUFACTURER	HODEL NUMBER	LUCATION
SOLENGID VALVE	TARGET ROCK		
SOLENOID VALVE		1/2SMSA01	DRYWELL - R1
	ATKOMATIC	15527	DRYALL - PI
SOLENGID VALVE	ATKOMATIC	15527	REACTOR BUILDING - RI7
SOLENOID VALVE	ATKOMATIC	13110	REACTOR BUILDING - P7, R9
SOLENOID VALVE	ASCO	NP8316E36E	REACTOR BUILDING - R2A, B
SOLENOID VALVE	ASCO	HVA904052A	PEACTOR HUILDING - R2A, B
SOLENOID VALVE	ASCU	LBXB320	DRYWELL = HI
SOLENOID VALVE	ASCO	L8X8320	STEAM TUNNEL - R4
SOLENOID VALVE	ASCO	L8H31615	REACTOR BUILDING - R6, R8
SOLENOID VALVE	ASCO	LBH 316815	SEACTOR BUILDING - R6, R8
SOLENOID VALVE	ASCO	HB8302C27F	REACTOR BUILDING - R6
SOLENOID VALVE	ASCO	P302C27RF	REACTOR BUILDING - R14
SOLENOID VALVE	ASCO	a 302C27RF	REACTOR BUILDING - RIO
SOLENOID VALVE	ASCO	WPL88300D58R	REACTOR BUILDING - R12
SOLENOID VALVE	ASCO	HT8320A189	DRYWELL - RI
SOLENOID VALVE	ASCO	HB8302C27F	REACTOR BUILDING - R12
SOLEROIS VALVE	ASCL	63006618	REACTOR BUILDING - NH
SOLENOID VALVE	ASCO	1.0031015	REACTOR BUILDING - RIG
SOLENUID VALVE	ASCO	831430	REACTOR BUILDING - #10
SOLENOID VALVE	ASCO	WP1.88300858RU	TURBINE BUILDING
SOLENOID VALVE	ASCO	L88344B39	TURBINE BUILDING
TRANSDUCER, I/P	MASONEILAN	8005	TURBINE BUILDING
MOTORIZED VALVE ACTUATOR	VELAN	2548	REACTOR BUILDING
MOTORIZED VALVE ACTUATOR	LIFITORQUE	SFA	TURBINE BUILDING - TSC
MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMB	DPYNELL - RI
MOTORIZED VALVE ACTUATOR	LIMITORQUE	SHROO	STEAM TUNNEL - R4
MOTORIZED VALVE ACTUATOR	LIMITOROUE	SMB000	DRYMELL - MI
MOTORIZED VALVE ACTUATOR	LIMITORQUE	SMBQUO	REACTOR BUILDING - R12
MOTORIZED VALVE ACTUATOR	LIMITORQUE	S#82	REACTOR HUILDING - R7, H9
MOTORIZED VALVE ACTUATOR	LIMITORQUE	SNB3	TURBINE BUILDING
MOTORIZED VALVE ACTUATOR	LIMITORQUE	503	DRYWELL - RI
MOTORIZED VALVE ACTUATOR	TELEDYNE	TIO	REACTOR BUILDING = R7, R19
MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR BUILDING - R7, M9
MOTORIZED VALVE ACTUATOR	TELEDYNE	110	DRYWELL - RI
MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTOR HUILDING
MOTORIZED VALVE ACTUATOR	TELEDYNE	T10	REACTUR BUILDING - R7, R9
.URIZED "ALVE ACTUATOR	TELEDYNE	TIU	REACTOR BUILDING - H2A, H2C
MUTORIZED VALVE ACTHATOR	TELEDYNE	T4	REACTOR BUILDING - R6
MOTORIZED VALVE ACTUATOR	TELEDYNE	T4	REACTOR BUILDING - H17
MOTORIZED VALVE ACTUATOR	TELEDYNE	T4	REACTUR HUILDING - HZA
MOTORIZED VALVE ACTUATOR	TELEDYNE	74	FFACTOR BUILDING - H9. H7
MOTORIZED VALVE ACTUATOR	TELEDYNE	T40	REACTOR BUILDING - HZA, HZC
MOTURIZED VALVE ACTUATOR	TELEDYNE	140	REACTOR BUILDING - FZA, R2C
MOTURIZED VALVE ACTUATOR	TELEDYNE	140	REACTOR SULLUING - HIT, HZA
MOTORIZED VALVE ACTUATOR	TELEDYNE	740	FEACTOF HUILDING - HZA, HZC
LIMIT SWITCH	NAMOU	SHAPLUCK	STEAN IDENEL - MA
LIMIT SWITCH	NANCO	FA740	DELAELL - #1
LIMIT SWITCH	MICHO SWITCH	DTF228N	REACTOR BUILDING - F16
LISIT SAITCH	MICRU SWITCH	UTF226+2	ALACTUM BUILDING - H12, No
LINIT SATCH	PICPO SHIPPH	51-176422	NEWCION DOLLOGING - FILL FD

51 11.76922

MICRO SHITCH

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FRC ITEM

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NO. COMPONENT -----

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: EQUIPMENT ENVIRONMENTAL QUALIFICATION : 1 EQUIPMENT ITEM CHECKSHEET INDEX :

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. C	UMPONENT	MANUFACTURER	MODEL NUMBER	LOCATION
	IMIT SWITCH	MICRO SWITCH	51MLT6022	REACTOP BUILDING - F12 REACTOR BUILDING - F10 TURBINE BUILDING REACTOR BUILDING REACTOR BUILDING REACTOR BUILDING REACTOR BUILDING REACTOR BUILDING
2 L	IMIT SWITCH	MICRO SWITCH	BAF12RN2	REACTOR BUILDING - R10
3 L	IMIT SWITCH IMIT SWITCH RESSURE SWITCH	ALLEN-BRADLEY STATIC-O-RING	BOZTANZ SERXES C	TURBINE BUILDING
	1 8 8 8 8 8 1 8 8 8 8 8 8 8 8 8 8 8 8 8	STATIC=0-RING	SNAA3	REACTOR BUILDING
5 FI	RESSURE SWITCH	STATIC-U-RING	12NAA4	REACTOR BUILDING
6 PI	RESSURE SWITCH	STATIC-U-RING BARKSDALE	82TA1255	REACTOR BUILDING
7 PI	RESSURE SWITCH	BARKSDALE	BITA1255CS	REACTOR BUILDING
8 PI	RESSURE SWITCH	MERCOID	HAF12HN2 B02TAW2 SERXES C SNAA3 12NAA4 B2TA12S5 B1TA12S5CS DA7043804R21E 288 37265549A292 372	REACTOR BUILDING
9 PI	RESSURE SWITCH	BARTON	288	REACTOR BUILDING
0 P	RESSURE SWITCH	MELETRON	37265549A292	HEACTOR BUILDING
1 P	RESSURE SWITCH	MELETRON	372	TURBINE BUILDING
2 PI	RESSURE SWITCH	MELETRON	92012L	REACTOR BUILDING
	RESSURE SWITCH	DUAL SNAP	604	TURBINE BUILDING - TSA
	RESSURE SWITCH	CUSTOM COMPONENT	372 92012L 604 630VH4105 AG*24 CLASS 9012 551032GAAW1 4418CE	REACTOR BUILDING - TOP OF TOPUS
	RESSURE SHITCH	SQUAKE D	AG#24 CLASS 9012	TURBINE BUILDING
	RESSURE TRANSMITTER	GENERAL ELECTRIC	551032GAAW1	REACTOR PUILDING
	EVEL SHITCH	YARWAY	4418CE	REACTOR BUILDING
	EVEL SWITCH	YARWAY	4418C	REACTOR BUILDING
	EVEL SWITCH	YARWAY Yarway Magneyrol Gould	730	CONDENSER BAY
	EVEL TRANSMITTER	GOULD	PD30184003811105540	PEACTOR BUILDING - TORUS 10 REACTOR BUILDING DRYWELL - RI
	LOW SWITCH	PEECO	HPF	REACTOR BUILDING
	CELEROMETER	ENDEVCO	2273AH20	DRYWELL - RI
	MPLIFIER	ENDEVCO	22CATR	DRYWELL - R1
	ELAY	CHROMALOX		REACTOR BUILDING
			RTD	REACTOR BUILDING
	EMPERATURE SWITCH	CONAX Fennal General Atomic	1700240	STEAM TUNNEL
	ADIATION DETECTOR	GENERAL ATOMIC	RD23	DRYWELL - R1
	LECTHICAL PENETRATION	GENERAL ELECTRIC	NS	DRYWELL - R1
	ERMINAL BLOCK	GENERAL ELECTRIC	5625	DRYNELL AND REACTOR BUILDING
	ERMINAL BLOCK	CENERAL ELECTRIC	CD151	DELCTIN BULLOTUC
	LEMINAL BLUCK	GENERAL ELECTRIC	LA131	CHYNELL - BI
	LECTRICAL CONNECTOR	TOPAL	CET CODEN TVDL MADN	
	LECTRICAL CONNECTOR	BURNOV	PAD AND TAPE TYPE	TURATAR BUTLDING TASC
	LECTRICAL CONVECTOR	BUDE DY	DAL AND TADE TYPE	LEACTOR AUTIONNO
	LECTRICAL CONNECTOR	BURNDI	DINC TONCHE HUTT SOLLEES THE	PERCINA BUILDING
	LECTRICAL CONNECTOR	BURNUT	NS EB25 CR151 N1100132 SET SCHEW TYPE MARM PAD AND TAPE TYPE PAU AND TAPE TYPE RING TONGUE BUTT SPLICES TAPE RING TONGUE BUTT SPLICES TAPED HING TOHGUE TAPE WCSFN 3075M6 RSS6104	SYEAN TUNET
	LECTRICAL CONNECTOR	BURNUT	HING TORGUE BUIL SPLICES TAPED	DEV-FIL - DI
	LECTRICAL CONNECTOR	DUPADI	ALING TUNGUE TAPE	
9 EI	LECTRICAL CABLE SPLICE LECTRICAL CABLE	KATCHEM	NC SF N	CHINCLL - HI
EI EI	LECTRICAL CAPLE	ENDEVED	307546 R556104 FK/FR HTK/FK	CHARLES * MI
	LECTRICAL CABLE, INSTRUMENT	RUCABESTUS	R000104	DHY-FLL - HI
E EI	LECTHICAL CABLE LECTRICAL CABLE LECTRICAL CABLE LECTRICAL CABLE LECTRICAL CABLE LECTRICAL CABLE LECTRICAL CABLE LECTRICAL CABLE	KEHITE	FR/FR	BYRELL - RI
EI	LECTHICAL CANLE	KERITE	HTK/FF	DETELL - RI
E EI	LECTRICAL CABLE	GENERAL ELECTRIC	\$158073	DFY +ELL - HI
5 EI	LECTRICAL CARLE	GENERAL ELECTRIC	\$158073	STEAM TUNNEL
E EI	LECTRICAL CABLE	GENERAL ELECTRIC	5158073	FFACTOR HUILDING
EI	LECTRICAL CABLE	GENERAL ELECTRIC	\$158073	TURBINE BUILDING
8 E1	LECTRICAL CABLE	GENERAL ELECTRIC	5158041	SIEAR TUNNEL - PA
	LECTHICAL CARLE	GENERAL ELECTRIC	5158081	REACTOR BUILDING
) FI	LECTFICAL CABLE	GENERAL ELECTRIC	5158081	LURPINE AULLDING

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1 EQUIPMENT ERVIRONMENTAL QUALIFICATION 1 EQUIPMENT ITEM CHECKSHEET INDEX

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FRC ITEM COMPONENT MANUFACTURER NO. MODEL NUMBER LOCATION 101 ELECTRICAL CABLE GENERAL ELECTRIC \$158110 DRYAELL = HI 102 ELECTRICAL CABLE GENERAL ELECTRIC SI58145 30 MIL VUL 45 MIL NEOP REACTOR BUILDING SISBIAS 30 MIL VUL 45 MIL NEOP TURBINE BUILDING 103 ELECTRICAL CABLE GENERAL ELECTRIC 104 THERMOCOUPLE CABLE GENERA', ELECTRIC CU/CONSTANTAN REACTOR BUILDING - R10 105 ELECTRIC MOTOR GENERAL ELECTRIC 5K184AL217 TURBINE BUILDING ELECTRIC MOTOR 106 GENERAL ELECTRIC 5K831171A2 TURNINE BUILDING ELECTRIC MOTOR 107 GENERAL ELECTRIC 5K6339XC44A TURBINE BUILDING 108 ELECTRIC MOTOR GENERAL ELECTRIC 5K861186A1 TURBINE BUILDING 109 ELECTRIC HUTOR GENERAL ELECTRIC 5K6326XC317A INTAKE STRUCTURE ELECTRIC MOTOR 110 GENERAL ELECTPIC 5K6338XC39A INTAKE STRUCTURE 111 ELECTRIC MOTOR GENERAL ELECTRIC 5K818841A134 REACTOR BUILDING ELECTRIC MOTOR GENERAL ELECTRIC 112 SK6329XC3A REACTOP BUILDING 113 ELECTRIC MOTOR GENERAL ELECTRIC 5K6338XC28A REACTOR BUILDING 58447XAM206 ELECTRIC MOTOR GENERAL ELECTRIC REACTOR BUILDING 114 MOTOR CONTROL CENTER GENERAL ELECTRIC HP171366 TUPBINE BUILDING 115 MOTOR CONTROL CENTER GENERAL ELECTRIC KP171366 116 REACTOR BUILDING 117 MOTOR CONTROL CENTER GENERAL ELECTRIC 7700 TURBINE BUILDING MOTOR CONTROL CENTER 7700 118 GENERAL ELECTRIC 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 TURBINE BUILDING 122 TRANSFORMER ITE. 1500/2000 KVA 123 BATTERY CHARGER FANSTEEL 4039 FURM A TUPBINE BUILDING 124 MOTOR-GENERATOR SET GENERAL ELECTRIC DC 5C0405E603/AC 5K365AK2005V/ TURBINE BUILDING 125 DIESEL GENERATOR FAIRBANKS MORSE 38TD8 1/8 TURBUCHARGED DIESEL GENERATOP ROOM 126 ELECTRIC HEATER ND ND IUNBINE BUILDING 127 ELECTRIC HEATER CUNTROLS JOHNSON SERVICE **T900 THERMOSTAT**

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SWITCHGEAR

SWITCHGEAR

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

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	- CIF	CLED	ITE	M(S)	ONI	Y:
(See Section 3 of this TFT for Legend)						
R, T, QT, RT, P, H, S, A, S, (R), M, I, M, RPN, EXN	, SEN	I, QI	, RE	ps, 1	lone,	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chec	kshe	eet I	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	15					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	3,	ж,	34		
System Consideration Review	44.	40,	45.	44.	401	41
Equipment Environmental Qualification Review			5c,		5e,	5£,
Installed TMI Lessons Learned Implementation Equipment Summary	∂,≰,	646				
Maintenance and Replacement Schedule Summary	7a,	7%,	26			

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QUIPMENT ENVIRONMENTAL QUALIF	FICATION REVIEW OF EQUIPMENT ITEM	NO
UMMARY OF LICENSEE RESPONSES TO THE	E NRC SER - ONLY CHECKED ITEMS ARE APP	LICABL
X The Licensee (has/has not) provi	ided a response to the SER concerns.	
	ifically stated that the equipment is when exposed to the applicable DBE 5.	
X The Licensee has presented infor outstanding qualification defici		
The Licensee (has/has not) propo item whose qualification has not	osed a corrective action for this equi t been fully established.	pment
Justification for interim op Licensee for this equipment	peration (has/has not) been provided by item.	y the
Corrective action specified	by the Licensee:	
Equipment replacement wi	th qualified equipment	
Equipment modification Equipment relocation abo	ve submergence level	
Relocate or shield equip	oment from radiation source	
Verify qualification by	oment from radiation source additional (testing/analysis)	
Equipment relocation to	a mild environment	
Qualification testing of Other (equipment in progress)
	ther information for this equipment ite basis for justification for interim	m
	erovided a schedule for the proposed e for accomplishing the corrective .)	
The Licensee states that the equ and/or should be exempted from e	ipment item does not require qualifica nvironmental qualification.	tion
ESIGNATION OF RESULTANT NRC QUALIFI CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON RE of this TER for Legend)	VIEW
	II.c Qualified Life Deficiency	
.a Qualified		
.a Qualified .b Modification I.a Qualification Not Established	III.a Exempt	

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. ________9

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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.D	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	



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.

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. <u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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 8.5 of this report.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

Checksheets 5a Chru 5g have been removed due to the

proprietary nature of information contained therein.

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EQUIPMENT ENVIR 1ENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

MAINTENANCE AND REFLACEMENT 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 0-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]

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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:

Contents	Chec	kshe	et I	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	ж,	¥.,	×		
System Consideration Review	44.,	44,	44,	48,	44.	Æ
Equipment Environmental Qualification Review			¥, ¥,		58,	5£,
Installed TMI Lessons Learned Implementation Equipment Summary	₿ 4 ,	96				
Maintenance and Replacement Schedule Summary	the.	28,	25			

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 No459	Page 1b
QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	10. 2
	NDA CED ONLY OUROURD THENC ARE ADDI	LCARLE
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - UNLI CHECKED TIEMS ARE APPI	11 CADLL
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
X The Licensee (has/has not) specify qualified and/or will function whe environmental service conditions.		
X The Licensee has presented information outstanding qualification deficier		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equip been fully established.	ment
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided by tem.	the
Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment	_)
and the second se	er information for this equipment iten sis for justification for interim	a
corrective action. (Schedule	ovided a schedule for the proposed for accomplishing the corrective .)	
The Licensee states that the equip and/or should be exempted from env	oment item does not require qualificat vironmental qualification.	ion
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o		IEW
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	

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NRC REQUIREMEN'TS

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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 T me) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION: X = CATEGORY

I.a Equipment Qualified I.D Equipment Qualification Pending Modification Equipment Qualification Not Established II.a × II.D Equipment Not Qualified II.C Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified III... 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.

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. <u>459</u>

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. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _2

Checksheets $5a_5 5fand 55$ have been removed due to the proprietary nature of information contained therein.

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. <u>459</u>

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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 -	CIF	CLED	ITE	M(S)	ONI	.Y:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RFN, EXN,	SEN	ı, @I	RE	PS, N	lone,	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chec	kshe	et I	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1b					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	35,	38		
System Consideration Review	₩,	446,	₩,	44.	40,	44
Equipment Environmental Qualification Review		SA, SA,			≫ €,	5f,
Installed TMI Lessons Learned Implementation Equipment Summary	₿ 4 ,	646				
Maintenance and Replacement Schedule Summary	76,	736,	75			

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. <u>3</u>
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
X The Licensee (has/h as not) specifiqualified and/or will function when environmental service conditions.	en exposed to the applicable DBE	
X The Licensee has presented inform outstanding qualification deficies		
The Licensee (has/has not) propositem whose qualification has not	ed a corrective action for this equi been fully established.	pment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided b tem.	y the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification		
Equipment relocation abov Relocate or shield equipm	ent from radiation source	
Verify qualification by a Equipment relocation to a	dditional (testing/analysis)	
Qualification testing of		
Other ()
	er information for this equipment it asis for justification for interim	em
The Licensee (has/has not) pr corrective action. (Schedule action	ovided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equi and/or should be exempted from en	ipment item does not require qualific nvironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification (II.a) Qualification Not Established	III.a Exempt III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Available	

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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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. Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

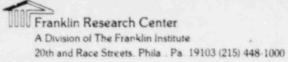
Page S

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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.



Page la

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, 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 34, 34, 34
System Consideration Review	44, 45, 45, 45, 45, 45, 45
Equipment Environmental Qualification Review	\$4, 96, 56, 54, 54, 56, 55, 95, 96, 94, 54, 55
Installed TMI Lessons Learned Implementation Equipment Summary	Q&, GB
Maintenance and Replacement Schedule Summary	7/2, 7/2, 7/2

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	20th and Race Streets.	Phila .	Pa	19103	(215)	448	1000

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

QUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM NO. 4
SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provide	d a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	cally stated that the equipment is n exposed to the applicable DBE
The Licensee has presented informa outstanding qualification deficient	
X The Licensee (has/has not) proposed item whose qualification has not be	d a corrective action for this equipment een fully established.
X Justification for interim oper Licensee for this equipment it	ation (has/ has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Awaiting qualification doc Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment equipment in progress
	er information for this equipment item sis for justification for interim
	for accomplishing the corrective
The Licensee states that the equip and/or should be exempted from env	oment item does not require qualification vironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
I.a Qualified I.b Modification II.a Qualification Not Established II.b Not Qualified	<pre>II.c Qualified Life Deficiency III.a Exempt III.b Deferred IV Documentation Not Available</pre>

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NRC Contract No. NRC-03-79-118 FHC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4/59

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

NRC QUALIFICATION CATEGORY

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 Ins ument Accuracy Satisfied Test Duration Margin (1 our + Function Time) Satisfied

Criteria Regarding Margin. Satisfied (NUREG-0588, Cat. I)

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.

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. 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. <u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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.



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. 44

Checksheets 54 have been removed due to the

proprietary nature of information contained therein.

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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, 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	15
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 36, 36, 36
System Consideration Review	茶, 城, 林, 秋, 城, 妖
Equipment Environmental Qualification Review	\$6, \$6, \$6, \$0, \$6, 5f, \$4, \$6, \$6, \$6
Installed TMI Lessons Learned Implementation Equipment Summary	×. ×
Maintenance and Replacement Schedule Summary	发, 浅, 泽

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 Ib
QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 5
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
X The Licensee has presented inform outstanding qualification deficie	ation which shows there are no ncies.	
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equ been fully established.	ipment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification	h qualified equipment	
Equipment relocation abov	e submergence level	
Relocate or shield equipm	ent from radiation source	
Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of Other (equipment in progress)
without and the	er information for this equipment i isis for justification for interim	tem
The second se	ovided a schedule for the proposed for accomplishing the corrective	.)
	pment item does not require qualifi	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
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 Availabl	

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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. 5

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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	
IL.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	
	ere diagonal and a subsection of the second s	CORE OF THE OWNER OF

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

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Page 3c

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. <u>Corrective Action - Surveillance and Preventive Maintenance Program</u> The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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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]

(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN,	SEN	1, QI	RI	PS, 1	lone,	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	ckshe	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1b					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	×.	×	×		
System Consideration Review	4%	¥6,	¥.,	۶.	¥.	¥
Equipment Environmental Qualification Review	¥., 59,	¥,	**	×4, ×	¥.,	5£,
Installed TMI Lessons Learned Implementation Equipment Summary	×.	36				
Maintenance and Replacement Schedule Summary	7a,	yé.	×			

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

- X The Licensee (has/has wet) 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.
- X The Licensee (has/hee not) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
 - X 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
 - X 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 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 Franklin Research Center A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 Page 2

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 Establ	.ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	
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	
 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)	

DESIGNATION:

NRC QUALIFICATION CATEGORY

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.D	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	

This item has been placed in Category I. It because the licensee has indicated that degradethe partic will be replaced, after initial replacement of parts the item should be listed as category Ia.

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 3a

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. 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. <u>459</u>

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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.

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

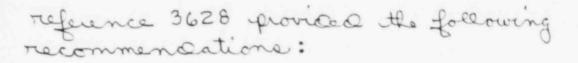
Page

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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.



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).
- 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.



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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-IA, 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, M, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Chec	kshe	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	3b,	ж,	×		
System Consideration Review	42,	¥б,	×,	秘,	¥é,	K
Equipment Environmental Qualification Review			5c, 5⊈:	5d,	5e,	5£,
Installed TMI Lessons Learned Implementation Equipment Summary	6ú,	θЮ				
Maintenance and Replacement Schedule Summary	76,	20,	×			

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UUU	Franklin Research	Cent	19			
	A Division of The Fran	klin Ins	stitut	e		
	20th and Race Streets.	Phila.	Pa	19103	(215)	448-10

UIPMENT ENVIRONMENT	TAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7
UMMARY OF LICENSEE RESPO	ONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
The Licensee (has/has	not) provided a response to the SER concerns.
	a not) specifically stated that the equipment is I function when exposed to the applicable DBE e conditions.
The Licensee has pres outstanding qualifica	sented information which shows there are no ation deficiencies.
The Licensee (has/has item whose qualificat	not) proposed a corrective action for this equipment tion has not been fully established.
_X Justification for Licensee for this	r interim operation (has/ has no t) been provided by the s equipment item.
\underline{X} Corrective action	n specified by the Licensee:
Equipment mod Equipment rel Relocate or s Verify qualif Zquipment rel	placement with qualified equipment dification location above submergence level shield equipment from radiation source fication by additional (testing/analysis) location to a mild environment h testing of equipment in progress
	provided other information for this equipment item trued as a basis for justification for interim
	s/ nas_not) provided a schedule for the proposed n. (Schedule for accomplishing the corrective NBER, 1982
	that the equipment item does not require qualification mpted from environmental qualification.
	NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW ee Section 3 of this TER for Legend)
.a Qualified 	II.c Qualified Life Deficiency III.a Exempt stablished III.b Not in Scope IV Documentation Not Available

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. <u>459</u>

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 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.D	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	

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

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.

Page 3a 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. <u>759</u>

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. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _Z

Checksheets 5a three 54 have been removed due to the

proprietary nature of information contained therein.

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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

Equipment Item No. 8 Solenoid Valve Located in the Steam Tunnel ASCO Model LBU 320 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) T, QT, RT, P, H, CS, (A) S, (R), M, I, (M, RPN, EXN, SEN, QI, RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Checksheet Page No. Contents la Equipment Item Summary of Licensee Responses to the NRC SER lb Equipment Environmental Qualification Summary Forms 2 3a, 35, 36, 36 Licensee Response to NRC SER 48, 36, 30, 10, 10, 36, 36 System Consideration Review 5a, 5b, 5c, 5d, 5e, 🛠, Equipment Environmental Qualification Review 550 56, 98, 55 64, 65 Installed TMI Lessons Learned Implementation Equipment Summary Maintenance and Replacement Schedule Summary 33, 78, 76

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QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NOP
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE
X The Licensee (has/has not) provid	led a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficie		
X The Licensee (has/h as not) propos item whose qualification has not		pment
X Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided b tem.	y the
X Corrective action specified b	by the Licensee:	
<u> </u>		
Relocate or shield equipm Verify qualification by a		
Equipment relocation to a	mild environment	
Qualification testing of Other (equipment in progress)
	er information for this equipment it sis for justification for interim	em
The Licensee (has/has not) pr corrective action. (Schedule action	ovided a schedule for the proposed for accomplishing the corrective $./982$.	,
/	pment item does not require qualification	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification II.a Qualification Not Established	III.a Exempt	
ria Analitication Not Established	III.b Not in Scope	

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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DESIGNATION: X = DEFICIENCY

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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

P

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 high stated to be 11.17 years. The unit is qualified for this application

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenance

33

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

<u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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 gualified 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 gualified for the time interval for which it is required. A Division of The Franklin Institute 20th and Race Streets. Phila Pa 19103 (215) 448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

Checksheets 5a three 5e have been removed due to the

proprietary nature of information contained therein.

Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000 NRC Contract No. VRC-03-79-118 FRC Project No. C5. 7 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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, 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: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER 1b 2 Equipment Environmental Qualification Summary Forms 3a, X, X, X, X Licensee Response to NRC SER ye the the the the the System Consideration Review x, x, x, x, x, x, st x, x, x, x Equipment Environmental Qualification Review àx, àt Installed TMI Lessons Learned Implementation Equipment Summary 7a, 20, 25 Maintenance and Replacement Schedule Summary

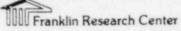
A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13 FRC Task No459

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SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABL
X The Licensee (has/ has not) provide	ed a response to the SER concerns.
The Licensee (has/has not) specif: qualified and/or will function who environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE
The Licensee has presented inform outstanding qualification deficient	ation which shows there are no ncies.
X The Licensee (has/has not) propose item whose qualification has not h	ed a corrective action for this equipment been fully established.
X Justification for interim open Licensee for this equipment in	ration (has/ has not), been provided by the tem.
X Corrective action specified by	y the Licensee:
Equipment replacement with Equipment modification	
Equipment relocation above	
Relocate or shield equipme Verify qualification by ac	
Equipment relocation to a	mild environment
Qualification testing of e	equipment in progress
X Other (Replace par	to see p-7a)
The Licensee has provided othe that can be construed as a bas operation.	er information for this equipment item sis for justification for interim
corrective action. (Schedule	ovided a schedule for the proposed for accomplishing the corrective ~ 1982 .
The Licensee states that the equi	pment item does not require qualification
and/or should be exempted from en	vironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFIC.	ATION EVALUATION CATEGORY BASED ON REVIEW
CIRCLED ITEM ONLY: (See Section 3 of	of this TER for Legend)
.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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20th and Race Streets. Phila .. Pa. 19103 (215) 448-1000

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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)
Criteria Regarding Margins Satistied (NOREG-0500, Cat. 1)

NRC QUALIFICATION CATEGORY

DESIGNATION: X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
	Equipment Qualification Not Established	
II.a	Equipment Not Qualified	
II.D	Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life	
II.c	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	

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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.

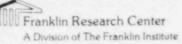
Corrective Action - Surveillance and Preventive Maintenance Program

The equipment will be incorporated in () 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.

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 affects 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 54 have been removed due to the

proprietary nature of information contained therein.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

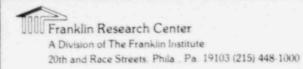
MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

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.



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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, 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:

Conten	

Checksheet Page No.

la

Equipment Item

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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0x, 6x

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 Ib
QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEN	NO. 12
UMMARY OF LICENSEE RESPONSES TO THE	NRC SER - UNLY CHECKED ITEMS ARE AP	PLICABLE
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	3
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) proposities item whose qualification has not item whose dualification has not have dualification has not have dualification has not have dualification has not have dualification have dualific		ipment
Justification for interim ope Licensee for this equipment i	ration (has/ has not) been provided tem.	by the
X Corrective action specified b	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by an Equipment relocation to a Qualification testing of Other (<u>Replace Pa</u>	e submergence level ent from radiation source dditional (testing/analysis) mild environment equipment in progress)
The Licensee has provided oth that can be construed as a ba operation.	er information for this equipment i sis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective 1982)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualifi vironmental qualification.	cation
ESIGNATION OF RESULTANT NRC QUALIFIC CIRCLED ITEM ONLY: (See Section 3		REVIEW
.a Qualified .b Modification I.a Qualification Not Established I.b Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Availabl	le

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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 R	lequired)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Requir	ed)
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	

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. 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. A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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.

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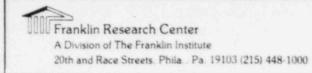
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

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).
- 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.



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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 Sequired Operating Time: 16.5 seconds PTR Checksheet No. 11 Reference 19, Section 4.5.2.21 Licensee Submittal: Page I-10 [22]

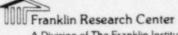
DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY: (See Section 3 of this TER for Legend) R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, (QI,) RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 36, 34, 34 Licensee Response to NRC SER 44, 456, 456, 456, 456, 456, 456 System Consideration Review 54, 54, 54, 54, 56, 5f, Equipment Environmental Qualification Review 54, 5%, 54, 5% 64, 06 Installed TMI Lessons Learned Implementation Equipment Summary 7a, 20, 20 Maintenance and Replacement Schedule Summary

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	A Division of The Fran	iklin Inst	itut	e		
	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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

UMMA	ARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABI
XI	The Licensee (has /has not) provided	a response to the SER concerns.
q	The Licensee (has/has not) specifica qualified and/or will function when environmental service conditions.	
	The Licensee has presented information butstanding qualification deficienci	
	The Licensee (has/ has not) proposed tem whose qualification has not bee	a corrective action for this equipment in fully established.
-	X Justification for interim operat Licensee for this equipment item	tion (has/has not) been provided by the 1 .
-	\mathbf{X} Corrective action specified by t	he Licensee:
	that can be construed as a basis operation.	submergence level from radiation source tional (testing/analysis) ld environment sipment in progress perfs per $p-7a$) information for this equipment item for justification for interim
	X The Licensee (has/mas not) provi corrective action. (Schedule for action	or accomplishing the corrective
1 a	The Licensee states that the equipme and/or should be exempted from envir	ent item does not require qualification onmental qualification.
	GNATION OF RESULTANT NRC QUALIFICATI RCLED ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW
I.a I.b II.a	Qualified Modification Qualification Not Established Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



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20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000

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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.D	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	

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. 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. 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. 4-59

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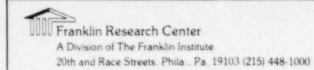
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

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:

- 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).
- Perform preventative maintenance every month as specified in Reference (14) to monitor performance of all nonmetallic materials.



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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, 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:

Contents	Chee	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	16					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	ж,	38,	325		
System Consideration Review	44,	200	₩,	4d.,	41.	45
Equipment Environmental Qualification Review			×		5%,	5£,
Installed TMI Lessons Learned Implementation Equipment Summary	6×.	616				
Maintenance and Replacement Schedule Summary	7a,	7%,	76			

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	20th and Race Streets.	Phila.	Pa	19103	(215)	448-1000	

EQU PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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. X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully estiblished. X Justification for interim operation (has/hao not) been provided by the Licensee for this equipment item. X 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 X Other (Ryplacement 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. X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective September 1982 action .) The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental gualification. 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 III.a Exempt I.b Modification III.b Not in Scope II.a Qualification Not Established II.b Not Qualified IV Documentation Not Available

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 2
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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

1

I.a	Equipment Qualified	X
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.D	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	

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. 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.

<u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

Checksheets <u>57</u> and <u>59</u> have been removed due to the proprietary nature of information contained therein.

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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).

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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: Checksheet Page No. Contents la Equipment Item 1b Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms 2 3a, 36, 36, 34 Licensee Response to NRC SER 10, 11× 10, 10, 10, 10, 11 System Consideration Review \$4, \$6, \$6, \$4, \$4, 5£, \$4, \$4, \$4, \$2, \$7 Equipment Environmental Qualification Review 84. 8× Installed TMI Lessons Learned Implementation Equipment Summary

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Maintenance and Replacement Schedule Summary

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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 gualification deficiencies. X 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. X 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 X 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. X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective Systember 1982 action The Licensee states that the equipment item does not require gualification 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 III.b Not in Scope II.b Not Qualified Documentation Not Available IV

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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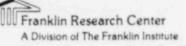
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequ Adequate Similarity Between Equipment and Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Est	Test Specimen Established
Program Established to Identify Aging Degr	adation
Criteria Regarding Aging Simulation Satisf	ied (If Required)
Criteria Regarding Temperature/Pressure Ex	posure:
o Peak Temperature Adequate	
o Peak Pressure Adequate	
o Duration Adequate	
o Required Profile Enveloped Adequate	1y
o Steam Exposure (If Required) Adequa	te
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	MICHAILES
Criteria Regarding Functional Testing Sati	sfied
Criteria Regarding Instrument Accuracy Sat	
Test Duration Margin (1 hour + Function Ti	me) Satisfied
Criteria Regarding Margins Satisfied (NURE	G-0588, Cat. I)

DESIGNATION: X = CATEGORY

NRC QUALIFICATION CATEGORY х Equipment Qualified I.a Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a Equipment Not Qualified II.b 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 Documentation Not Made Available IV



20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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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 -orrespondence.



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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

Checksheets 57 have been removed due to the

proprietary nature of information contained therein.

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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.

21

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. "

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

Equipment Item No. 14 Solenoid Valve Located in the Reactor Building ASCO Model WPLB8300D58R Actuates SBGT 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, 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: Checksheet Page No. Contents la Equipment Item Summary of Licensee Responses to the NRC SER 1b 2 Equipment Environmental Qualification Summary Forms 3a, 35, 36, 3d Licensee Response to NRC SER 300, 48, 4×, 40, 40, 40, 40 System Consideration Review 96, 51, 96, 96, 58, 55, 96, 51, 51, 52, Equipment Environmental Qualification Review 30. 36 Installed TMI Lessons Learned Implementation Equipment Summary 7a, 1%, 7% Maintenance and Replacement Schedule Summary

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 14
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specific qualified and/or will function where environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented information outstanding qualification deficies		
X The Licensee (has/ has not) proposition has not item whose qualification has not item	ed a corrective action for this equipped a corrective action for this equipped.	ipment
X Justification for interim oper Licensee for this equipment in	ration (has/ has not) been provided b tem.	by the
$\underline{\times}$ Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e X Other (<u>Puplacume</u>	e submergence level ent from radiation source dditional (testing/analysis) mild environment)
	er information for this equipment it sis for justification for interim	em
	for accomplishing the corrective)
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualific vironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		EVIEW
I.a Qualified I.b Modification II.a Qualification Not Established II.b Not Qualified	II.c Qualified Life Deficiency JII.a Exempt III.b Not in Scope IV Documentation Not 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. 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.D	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	

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. 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.

3 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. 14

Checksheets 57 have been removed due to the

proprietary nature of information contained therein.

Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Fa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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 nonmetallic materials.

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. <u>459</u>

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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, 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:

Contents	Checksheet Page No.
Equipment Item	la
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System Consideration Review	Xa, 45, 46, 48, 46, XE
Equipment Environmental Qualification Review	5a, 36, 36, 56, 56, 56, 5f, 5g, 36, 51, 50
Installed TMI Lessons Learned Implementation Equipment Summary	ða: 96
Maintenance and Replacement Schedule Summary	孩, 我, 老

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. <u>459</u>	Page I b
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEN	NO. 15
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficies		
The Licensee (has/has not) propose item whose qualification has not i	ed a corrective action for this equ been fully established.	ipment
X Justification for interim oper Licensee for this equipment is	ration (has/ has not) been provided (tem.	by the
X Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ac Equipment relocation to a Qualification testing of e Awaiting qualification doe Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment equipment in progress cumentation from the vendor)
The Licensee has provided other that can be construed as a bas operation.	er information for this equipment is sis for justification for interim	cem
The Licensee (has/has not) pro corrective action. (Schedule action	for accomplishing the corrective	.)
The Licensee states that the equip and/or should be exempted from env	oment item does not require qualific vironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		REVIEW
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 Deferred IV Documentation Not Available	2

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. 15

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specime	n Established
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If	Pequirad
	Reduited)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Requ	ired)
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) Satisfie	
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.D	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	

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. <u>459</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

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. Franklin Research Center A Division or 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. <u>459</u>

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.

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. <u>459</u>

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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]

(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: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER 16 2 Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER 3a, 3%, 3%, 3% 44, 40, 40, 40, 48, 46, 45 System Consideration Review 54, 56, 54, 54, 58, 5f, Equipment Environmental Qualification Review 39, 34, 34, 35 Installed TMI Lessons Learned Implementation 38, 5% Equipment Summary 7a, 72, 26 Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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	20th and Race Streets.	Phila .	Pa	19103	(215)	448-1000	ŧ.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X 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.
environmental service conditions.
The Licensee has presented information which shows there are no
outstanding qualification deficiencies.
V The Licensee (has /has not) proposed a corrective action for this equipment
X The Licensee (has/has not) proposed a corrective action for this equipment
item whose qualification has not been fully established.
X Justification for interim operation (has/has-not) been provided by the
Licensee for this equipment item.
proceduce for envis equipment feem.
X
X 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
<pre>Verify qualification by additional (testing/analysis)</pre>
Equipment relocation to a mild environment
Qualification testing of equipment in progress
× Other (Replacement of Parts, See p-7a)
0
The Licensee has provided other information for this equipment item
that can be construed as a basis for justification for interim
operation.
X 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 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

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. 16

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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	

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. 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.

5 Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila . Pa. 19103 (215) 448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

Checksheets 5 f have been removed due to the

proprietary nature of information contained therein.

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. 16

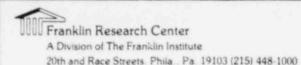
MAINTENANCE AND REPLACEMENT SCHEDULE SUMMARY

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 HB8302C27F are as follow:

- 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. N

[3633]



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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, 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:

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Equipment Item

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Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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h	and	Race	Streets.	Phila.	Pa	19103	(215)	448-	1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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. X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X 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 X Other (Replecement of Barts, 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. X The Licensee (has/nas not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _ Austennta 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) 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

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 GUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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.D	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	

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. 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.

<u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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 5 f have been removed due to the

proprietary nature of information contained therein.

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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:

- 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.

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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:

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Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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	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
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SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/has not) provide	d a response to the SER concerns.
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is en exposed to the applicable DBE
The Licensee has presented informa outstanding qualification deficien	
X The Licensee (has/has-not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
X Justification for interim oper Licensee for this equipment it	ation (has/ has not) been provided by the em.
\underline{X} Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	
Equipment relocation above Relocate or shield equipme	e submergence level
Verify qualification by ad	ditional (testing/analysis)
Equipment relocation to a	mild environment
Qualification testing of e	
X Other (mon Barts, Der p- 7a)
The Licensee has provided othe	er information for this equipment item
	sis for justification for interim
operation.	
Y The Licensee the end of or	ovided a schedule for the proposed
corrective ac on	for accomplishing the corrective
action Austernley	- 1982 .)
and/or should be exempted from env	pment item does not require qualification
	ATION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3 of	or this TER (or Legend)
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. 18

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EQUIPMENT ENVIPONMENTAL 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	\underline{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	

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. 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. Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila . Pa. 19103 (215, 448-1000

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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.

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FRC Project No. C5257	
FRC Assignment No. 13	
FRC Task No. 459	

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EQUIPMENT ENVIRONMENTAL QUAL!FICATION 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).
 - 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, 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:

Contents	Chec	ckshe	et l	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	38,	34		
System Consideration Review	4a,	46 ,	₩,	₩,	₩,	44
Equipment Environmental Qualification Review		5%, 5%,		58, 55	56,	5f,
Installed TMI Lessons Learned Implementation Equipment Summary	ðá.,	ðð				
Maintenance and Replacement Schedule Summary	7a,	75.	7%			

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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. X The Licensee (has/has-not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has has not) been provided by the Licensee for this equipment item. X 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 Carte, Rel p- Ta The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation. X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action <u>September 1988</u> .) The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental gualification. 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 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.D	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	

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. 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

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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. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

Checksheets 5f have been removed due to the

proprietary nature of information contained therein.

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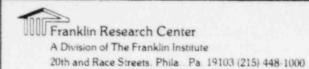
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

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 <u>coil now</u> (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, 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:

Contents	Che	cksh	eet	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	16					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	34,	渊,	36,	38		
System Consideration Review	44,	4×6,	44,	424,	406,	₩
Equipment Environmental Qualification Review			98, 94,	98, 93	38 ,	5%,
Installed TMI Lessons Learned Implementation Equipment Summary	ça,	646				
Maintenance and Replacement Schedule Summary	the.	75,	75			

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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.
Turbifizzbiez for interio encetion (becker out) to a to the
Justification for interim operation (has/has not) been provided by the
Licensee for this equipment item.
Corrective action specified by the Licensee:
Ourcourve accion specified by the bicensee.
Equipment replacement with gualified 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
II.b Not Qualified IV Documentation Not Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

EQUIPMEN'T ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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)
Criteria Regarding Margins Sacistied (NOREG-0500) Cat. 1)

NRC QUALIFICATION 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

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. <u>459</u>	Page I a
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITE	M 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, 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:

Contents	Checksheet Page No.
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Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	34, 36, 36, 38
System Consideration Review	44, 36, 36, 38, 38, 35
Equipment Environmental Qualification Review	34, 34, 36, 36, 36, 38, 38, 36, 34, 34, 35
Installed TMI Lessons Learned Implementation Equipment Summary	656, 340
Maintenance and Replacement Schedule Summary	764, 75K, 764

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 21	-
SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	E :
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 7

IV Documentation Not Available

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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 Establ	lished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	ed)
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)	

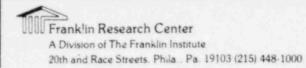
NRC QUALIFICATION CATEGORY

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DESIGNATION: X = CATEGORY

X

MILD ENVIRONMENT



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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:

Contents

Equipment Item

Checksheet Page No.

la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 36, 36, 38, 38 Licensee Response to NRC SER 4a, 4b, 4c, 4d, 4d, 4d, 4d System Consideration Review 38, 56, 98, 54, 34, 34, 34, Equipment Environmental Qualification Review 39, 5%, 34, 35

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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66, 68

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
SOMMARY OF LICENSEE RESPONSES TO THE MAC SER - UNLI CHECKED TIENS ARE APPLICABLE
K 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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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	-
 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)	
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	other division in which the real of the local division in which the local division is not the local division of the local division in the local division i

NRC QUALIFICATION CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.D	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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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 <u>not</u> 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." 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. 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

- 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION DEVIEW OF EQUIPMENT ITEM NO. 22

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)
- _____ 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

SYSTEM CONSIDERATION REVIEW

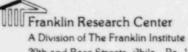
EVALUATION OF LICENSEE STATEMENT (Continued)

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 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, 1 + 15 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. 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]

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(See Section 3 of this TER for Legend)						_
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN	, SEN	N, @		PS, 1	None	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1b					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	ж,	38		
System Consideration Review	4a,	4b,	4c,	44,	44,	4≸
Equipment Environmental Qualification Review		946, 546,			€,	5f,
Installed TMI Lessons Learned Implementation Equipment Summary	81 ,	8 %				
Maintenance and Replacement Schedule Summary	72.	75,	*			

DESIGNATION FOR DEPICTENCY IDENTIFIED BY THE NOC CED - CIDCLED THEM (C) ONLY

A	NRC Contr
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RC Project No. C5257
RC Assignment No. 13
RC Task No. 459

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provide	ed a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function who environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE
The Licensee has presented information outstanding qualification deficies	
The Licensee (has/has not) propose item whose qualification has not h	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment is	ration (has/has not) been provided by the tem.
Corrective action specified by	y the Licensee:
Equipment replacement with Equipment modification	h qualified equipment
Equipment relocation above	
Relocate or shield equipme	ent from radiation source
Verify qualification by ac Equipment relocation to a	ditional (testing/analysis)
Qualification testing of e	
Other ()
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from en	pment item does not require qualification vironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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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:	
c 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)	
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NRC QUALIFICATION CATEGORY

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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.D	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	

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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. 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." 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. 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

- ____ 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.

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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____)

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, GEE-80-660.

"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."

Reason for Non-Concurrence

- Although backup equipment is available, it is not technically sound to relinguish 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.
- X Other (see page 4c)

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. <u>459</u>

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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.

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NRC Contract No. NRC-03-79-118 Page Franklin Research Center FRC Project No. C5257 51 FRC Assignment No. 13 A Division of The Franklin Institute 459 20th and Race Streets, Phila, Pa. 19103 (215) 448-1000 FRC Task No. EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23 NOTES: The Licensee has reiterated the contention this equipment need not be environment. ally qualified 2. The Licensee had previously committed replace this equipment item with gualified prior to June 30, 1982 as stated units TER-C5257-204[19] 3. The system consideration review (pages 4a,b,c) icensee's claim does not concur with the equipment does not need to be that environmentally qualified.] This position previously stated 5257-204[19] was IER 17 -C section 4.6.5 The Licensee has not cited any qualification 4. 1 documen this equipment tor 100 his equipment item is assigned to NRC 5. ategory II.a, Qualification C because no documentation has been provided tion has been determined that this equipment

item is required to be functional and, therefore environmentally gualified. 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. <u>459</u>

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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, 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:

Contents		Checksheet Page No.					
Equipment Item	la						
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Equipment Environmental Qualification Summary Forms	2						
Licensee Response to NRC SER	3a,	36.,	36,	324			
System Consideration Review	46,	46,	₩,	₩.,	₩,	¥	
Equipment Environmental Qualification Review			5 1,		58,	5f,	
Installed TMI Lessons Learned Implementation Equipment Summary	\$4,	3K					
Maintenance and Replacement Schedule Summary	7a.	70.	74				

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licenses (has has not) provided a response to the SER concerns. X 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. X The Licensee (has/has not) proposed a corrective action for this equipment item whose gualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X 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 -X Other (Replace seals and grokets/includein The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation. X The Licensee (has/as 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 gualification. DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY SASED 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 III.b Not in Scope II.b Not Qualified IV Documentation Not Available

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448 1300 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.

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	1
Qualified Life or Replacement Schedule Established (If Required)	1
Program Established to Identify Aging Degradation	"
	1
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	Ĩ
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	1
street a system in arguin successed (notate story) out at	-

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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

LICENSEE RESPONSE TO NRC SER

The equipment will be incorporated into the plant Surverlance 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 schedu's 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 57 thru 5i have been removed due to the

proprietary nature of information contained therein.

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. 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,

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

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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. <u>459</u>	Page
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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	- CI	RCLE	D IT	EM (S) ON	LY:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN	, SEI	N, Q	R. R	PS,	None	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	cksh	eet	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	12					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	the ste	31		
System Consideration Review	4.	4%	46	4.d.	se.	₹£
Equipment Environmental Qualification Review	50,	56, 56,	×,	34.	56,	5f,
Installed TMI Lessons Learned Implementation Equipment Summary	ya.	6¢				
Maintenance and Replacement Schedule Summary	7h	76	K			

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SUM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
_X	The Licensee (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.
X	The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

X 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.

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified I.b Modification (I.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 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. 25 EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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) DESIGNATION: X = CATEGORY NRC QUALIFICATION CATEGORY

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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	

A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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Project No. C5257
Assignment No. 13
Task No
Assignment No. 13

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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 page was inadvertently left out of the submittal)

S Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

Equipment Item No. 26 Motorized Valve Actuator Located in the Steam Tunnel Limitorque 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]

(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN	, SEI	N, @	RI	PS, 1	None	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Che	ckshe	eet i	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1b					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	ж,	ж,	38		
System Consideration Review	4×.	46.,	\$\$,	41,	**.	₩
Equipment Environmental Qualification Review	1. Sec. 1. Sec		5c, 5%,	and the second sec	5e,	5£,
Installed TMI Lessons Learned Implementation Equipment Summary	68.,	96				
Maintenance and Replacement Schedule Summary	74,	7%,	76			

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. <u>26</u>
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
	-	
— The Licensee has presented inform outstanding qualification deficies		
item whose qualification has not Justification for interim ope	ration (has/has not) been provided i	
Licensee for this equipment i	by the Licensee:	
Equipment replacement wit Equipment modification Equipment relocation abov Relocate or shield equipm Verify qualification by a Equipment relocation to a Qualification testing of Other (ve submergence level ment from radiation source additional (testing/analysis) a mild environment equipment in progress)
	ner information for this equipment i asis for justification for interim	tem
	rovided a schedule for the proposed a for accomplishing the corrective	.)
The Licensee states that the equi and/or should be exempted from en	ipment item does not require qualifinvironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
I.a Qualified I.b Modification	II.c Qualified Life Deficiency III.a Exempt]

II.b Not Qualified

II.a Qualification Not Established III.b Not in Scope

IV Documentation Not Available

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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 Specimer. Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required)	X
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.D	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

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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 three 5q 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

Equipment Item No. 27 Motorized Valve Actuator Located in the Drywell Limitorque 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, 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: Contents Checksheet Page No. Equipment Item la Summary of Li ensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 Licensee Response to NRC SER 38, 36, 36, 36 System Consideration Review 44, 44, 44, 44, 44, 40€ Equipment Environmental Qualification Review 54, 56, 56, 36, 56, 58, 39, 34, 34, 35 Installed TMI Lessons Learned Implementation 65 68 Equipment Summary Maintenance and Replacement Schedule Summary 76, 76, 76

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	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

1.1													
SUMMARY	OF	LICENSEE	RESPONSES	TO	THE	NRC	SER	-	ONLY	CHECKED	ITEMS	ARE	APPLICABLE:

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

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

X	The	Licens	see	(has	/has	not)	aped	cifica	ally	stat	:ed	that	the	equip	nent	is
,	qual	ified	and,	/or	will	funct	ion	when	expo	osed	to	the	appli	cable	DBE	
	envi	ronmer	ital	ser	vice	condi	ition	ns.								

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.

X 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 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 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 Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Pa 19103 (215) 448-1000

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4/5 9

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459 FRC Task No. EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27 EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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) DESIGNATION: X = CATEGORY NRC QUALIFICATION CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b II.a Equipment Qualification Not Established

	ridarbuote Kagassesan	of the second
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	
TV	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. 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 Limitorque 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, 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:

Contents

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Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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Checksheet Page No.

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20th and Race Streets. Phila. Pa. (9103)(215) 448-1000	FRC Task No. 457
QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM NO. 28
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provid	ed a response to the SER concerns.
X The Licensee (has/has not) specific qualified and/or will function wh environmental service conditions.	en exposed to the applicable DBE
The Licensee has presented inform outstanding qualification deficie	
The Licensee (has/has not) propositient whose qualification has not	ed a corrective action for this equipment been fully established.
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided by the tem.
Corrective action specified b	y the Licensee:
Equipment replacement with Equipment modification Equipment relocation above	e submergence level
Relocate or shield equipmed Verify qualification by an arrow of the second sec	ent from radiation source dditional (testing/analysis)
Equipment relocation to a	mild environment
Qualification testing of Other (equipment in progress)
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from en-	pment item does not require qualification vironmental qualification.
ESIGNATION OF RESULTANT NRC QUALIFIC CIRCLED ITEM ONLY: (See Section 3 of	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
.a Qualified .b Modification I.a Qualification Not Established	(II.c) Qualified Life Deficiency III.a Exempt III.b Not in Scope
I.b Not Qualified	IV Documentation Not Available

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. 28

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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

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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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. 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29

Equipment Item No. 29 Motorized Valve Actuate: 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]

(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN	, SEI	N, @		5, 1	None	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	ckshe	eet J	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	38,	38,	38		
System Consideration Review	4%,	48.,	₩,	48,	44,	*
Equipment Environmental Qualification Review			∞, ×,	1.00	56,	5f
Installed TMI Lessons Learned Implementation Equipment Summary	64 ,	646				1
Maintenance and Replacement Schedule Summary	200,	75,	721			

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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A Division of The Franklin Institute 20th and Race Streets. Phila., Fe. 19103 (215) 448-1000	FRC Assignment No. 13 FRC Task No. <u>459</u>	Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT I	TEM NO. 29
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS AR	E APPLICABLE
X The Licensee (has/has not) provide	ed a response to the SER concer	ns.
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.	en exposed to the applicable DB	
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propositient whose qualification has not		equipment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provi tem.	ded by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification	h qualified equipment	
Equipment relocation abov	e submergence level	
	ent from radiation source	
	dditional (testing/analysis)	
Equipment relocation to a		
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

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DESIGNATION: X = DEFICIENCY

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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 Mod fication	
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 IV	Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	
TA	bocamentation not have hvariable	

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. 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.

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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]

(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: Checksheet Page No. Contents la. Equipment Item 16 Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms 2 3a, 36, 35, 35 Licensee Response to NRC SER 4a, 4b, 4c, 4c, 4c, 4c, 4c System Consideration Review 34, 36, 36, 36, 36, 36, 34, 53, 54, 54, 34 Equipment Environmental Qualification Review 52, 65 Installed TMI Lessons Learned Implementation Equipment Summary 3/2, Tor the Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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NRC Contract No. NRC-03-79-118 FRC Project No. C5_57 FRC Assignment No. 13 FRC Task No. 459

20th and Race Streets. Finia . Fa 17103 (213) 4	FRC Task NO757
QUIPMENT ENVIRONMENTAL Q	UALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30
SUMMARY OF LICENSEE RESPONSES '	TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/ has not)	provided a response to the SER concerns.
	specifically stated that the equipment is tion when exposed to the applicable DBE itions.
The Licensee has presented outstanding qualification of	information which shows there are no deficiencies.
	proposed a corrective action for this equipment as not been fully established.
Justification for inter Licensee for this equip	rim operation (has/has not) been provided by the pment item.
Corrective action spec	ified by the Licensee:
Equipment modification Equipment relocation Relocate or shield Verify qualification Equipment relocation	ent with qualified equipment tion on above submergence level equipment from radiation source on by additional (testing/analysis) on to a mild environment ing of equipment in progress
X The Licensee has provi- that can be construed operation.	ded other information for this equipment item as a basis for justification for interim
corrective action. (S	not) provided a schedule for the proposed schedule for accomplishing the corrective
X The Licensee states that t and/or should be exempted	the equipment item does not require qualification from environmental qualification.
	UALIFICATION EVALUATION CATEGORY BASED ON REVIEW tion 3 of this TER for Legend)
I.a Qualified I.b Modification II.a Qualification Not Establi II.b Not Qualified	II.c Qualified Life Deficiency III.a Exempt .shed II.D Not in Scope IV Documentation Not Available

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. 13 459 FRC Task No.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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

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.

DESIGNATION:

X = DEFICIENCY

DESIGNATION: X = CATEGORY

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. 4-59

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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 <u>not</u> 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." 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. <u>459</u>

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

- ____ 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)

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.

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20th and Race Streets. Phila., Pa. 19103 (215) 443-1000

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. 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)
- 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)

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 is 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 aucident for which the FWCI system is required to mitigate is not the same accident which causes a hostile environment in the turbine building. 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. 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

and the

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. 31

Equipment Item No. 31 Motorized Valve Actuator Located in the Drywell Limitorque 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]

(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: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER 1b 2 Equipment Environmental Qualification Summary Forms 3a, 3b, 3c, 3d Licensee Response to NRC SER -4a, 4b, 40, 4d, 4e, 4E -System Consideration Review 5a, 5b, 5c, 5d, 5e, 5f, Equipment Environmental Qualification Review 5g, 5h, 5i, 5j Installed TMI Lessons Learned Implementation -6a, 6b Equipment Summary Maintenance and Replacement Schedule Summary 7a, 7b, 7c

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 31

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

- X The Licensee (has/hes not) provided a response to the SER concerns.
- X The Licensee (has/<u>has not</u>) 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 (

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- ____ 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 Qualifica on Not Established II.b Not Qualified II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

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. 31

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	_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	

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. 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

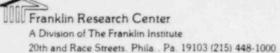
Prev ...ative Maintenance Program.

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. 3/

Checksheets 5a Thrue 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. 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 -	CI	RCLEI) IT	EM (S)	ONI	LY:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN,	SEN	, Q	RI (PS, N	lone	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	ckshe	et	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	16					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	¥6,	ж,	×		
System Consideration Review	3%	4/2	¥.	¥4.,	40	*
Equipment Environmental Qualification Review	%,	**	××.	××	*	×E.
Installed TMI Lessons Learned Implementation Equipment Summary	Fa.	6%				
Maintenance and Replacement Schedule Summary	ж,	₩,	70			

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM NO. 32
UMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provide	ed a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function who environmental service conditions.	
The Licensee has presented information outstanding qualification deficies	
The Licensee (has/kas-not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
X Justification for interim open Licensee for this equipment it	ration (has/ has_not) been provided by the tem.
X Corrective action specified by	y the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipment Verify qualification by ad Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualification vironmental qualification.
ESIGNATION OF RESULTANT NRC QUALIFICA CIRCLED ITEM ONLY: (See Section 3 of	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
a Qualified D Modification .a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope
I.b Not Qualified	IV Documentation Not Available

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

i.

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

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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.

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. 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.

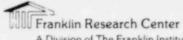
Replacement Schedule

10.

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



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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	DEFICI	ENCY	IDE	NTIFIED	BY	THE	NRC	SER	-	CIRCLED	ITEM(S)	ONLY:
(See Sectio	n 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:

Contents	Chec	kshe	eet H	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	16					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	ж,	34		
System Consideration Review	4a.,	¥\$,	×	44.	*	×
Equipment Environmental Qualification Review	54. 54.	9%, 5%	教教	*	¥.,	¥,
Installed TMI Lessons Learned Implementation Equipment Summary	34.	3 8.				
Maintenance and Replacement Schedule Summary	7é	X	X			

EQUIPMENT	ENVIRONMENTAL	QUALIFICATION	REVIEW OF	EQUIPMENT	ITEM NO. 33	1
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SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABL
X The Licensee (has/has not) provid	ded a response to the SER concerns.
	fically stated that the equipment is hen exposed to the applicable DBE
The Licensee has presented inform outstanding qualification deficie	
X The Licensee (has/ has not) propos item whose qualification has not	sed a corrective action for this equipment been fully established.
X Justification for interim operation Licensee for this equipment is	eration (has/ has not) been provided by the item.
X Corrective action specified b	by the Licensee:
Equipment replacement wit	th qualified equipment
Equipment relocation abov	ve submergence level
Relocate or shield equipm	ment from radiation source
Verify qualification by a	additional (testing/analysis)
Equipment relocation to a	
Qualification testing of	equipment in progress
Other ()
	ner information for this equipment item asis for justification for interim
that can be construed as a ba operation. X The Licensee (has/ has not) pr	asis for justification for interim rovided a schedule for the proposed a for accomplishing the corrective
that can be construed as a bacoperation. X The Licensee (has/has not) pr corrective action. (Schedule action <u>SEPTERBER</u>	asis for justification for interim rovided a schedule for the proposed a for accomplishing the corrective 2 1982.)
that can be construed as a bacoperation. X The Licensee (has/has not) pr corrective action. (Schedule action <u>SEPTERBER</u>	asis for justification for interim rovided a schedule for the proposed a for accomplishing the corrective $\frac{1982}{}$.)
<pre>that can be construed as a ba operation. X The Licensee (has/has not) pr corrective action. (Schedule action <u>SEPTENDER</u> The Licensee states that the equi and/or should be exempted from en</pre>	asis for justification for interim rovided a schedule for the proposed a for accomplishing the corrective $\frac{1982}{}$.)
<pre>that can be construed as a ba operation. X The Licensee (has/has not) pr corrective action. (Schedule action <u>SEPTENDER</u> The Licensee states that the equi and/or should be exempted from en</pre>	asis for justification for interim rovided a schedule for the proposed e for accomplishing the corrective $\frac{1982}{}$.) ipment item does not require qualification nvironmental qualification. CATION EVALUATION CATEGORY BASED ON REVIEW
<pre>that can be construed as a ba operation. X The Licensee (has/has net) pr corrective action. (Schedule action <u>SEPTEMBER</u> The Licensee states that the equi and/or should be exempted from en ESIGNATION OF RESULTANT NRC QUALIFIC CIRCLED ITEM ONLY: (See Section 3</pre>	asis for justification for interim rovided a schedule for the proposed a for accomplishing the corrective $\frac{1982}{}$.) ipment item does not require qualification nvironmental qualification. CATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
that can be construed as a ba operation. X The Licensee (has/has not) pr corrective action. (Schedule action <u>SEPTEMBER</u> The Licensee states that the equi and/or should be exempted from en ESIGNATION OF RESULTANT NRC QUALIFIC CIRCLED ITEM ONLY: (See Section 3 a Qualified	asis for justification for interim rovided a schedule for the proposed e for accomplishing the corrective <u>1982</u>) ipment item does not require qualification nvironmental qualification. <u>CATION EVALUATION CATEGORY BASED ON REVIEW</u> of this TER for Legend) II.c Qualified Life Deficiency
<pre>that can be construed as a ba operation. X The Licensee (has/has not) pr corrective action. (Schedule action <u>SEPTENDER</u> The Licensee states that the equi and/or should be exempted from en ESIGNATION OF RESULTANT NRC QUALIFIC</pre>	asis for justification for interim rovided a schedule for the proposed e for accomplishing the corrective <u>1982</u>

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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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 33

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	

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-03-79-118FRC Project No. C5257FRC Assignment No. 13FRC Task No.459

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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

3

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



Page

la

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	n 3	f this TER	for Legend)	1							

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

	S	1 Au	-	-
Contents	-01	nce	nt	S

Checksheet Page No.

Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	36,	×		
System Consideration Review	50	40	×	×	×,	*
Equipment Environmental Qualification Review	36	×	××	**	30.	%
Installed TMI Lessons Learned Implementation Equipment Summary	54.	9KL				

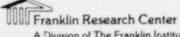
Maintenance and Replacement Schedule Summary

76, 76, 7a

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>4.59</u>

EQUIPMENT ENVIRONMENTAL	QUALIFICATION REVIEW	OF EQUIPMENT ITE	M NO. 34

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not provided a response to the SER concerns.
X 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.
X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
X Corrective action specified by the Licensee:
<pre>X 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 ()</pre>
The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
X The Licensee (has/hes 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.
<u>DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW</u> - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.a QualifiedII.c Qualified Life DeficiencyI.b ModificationIII.a ExemptII.a Qualification Not EstablishedIII.b Not in ScopeII.b Not QualifiedIV



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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)	
Qualified Life of Replacement Schedule Established (if Regulted)	
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	
	enclosition phonological
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	and the second sec
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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 34

LICENSEE RESPONSE TO NRC SER

Surveillance and Preventive Maintenarice

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, 1902. 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



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. 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:

Contents

Checksheet Page No.

Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	38,	325,	¥.,	34		
System Consideration Review	40	40.	₩,	44,	456,	₽£
Equipment Environmental Qualification Review			98. 92.		₩,	58,
Installed TMI Lessons Learned Implementation Equipment Summary	фя,	64				
Maintenance and Replacement Schedule Summary	72,	76,	25			

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEN	NO. 35
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AN	
	The blac onbi enderad Titald Inc. (1	PLICABLE:
	ed a response to the SER concerns.	PLICABLE:

- The Licensee has presented information which shows there are no outstanding gualification 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

Note - Cold Abutdum & quepment



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.35

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

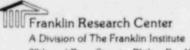
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Established	
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required)	
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation 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.D	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. 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:

Contents		cksh	eet 1	Page	No.	
Equipment Item	ìa					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	ж,	×,	×		
System Consideration Review	36,	36,	¥c,	44	¥4.	*
Equipment Environmental Qualification Review	54,	×,	X	×,×	₹,	¥.
Installed TMI Lessons Learned Implementation Equipment Summary	54	9K				
Maintenance and Replacement Schedule Summary	74,	20	×			

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 34

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has not) provided a response to the SER concerns. X 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 gualification deficiencies. X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: X 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. X The Licensee (has/nes 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 qualirication 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 III.a Exempt I.b Modification II.a Qualification Not Established III.b Not in Scope IV Documentation Not Available II.b Not Qualified

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 36

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Sacisfied (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.

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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

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. 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, 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:

Contents	Chee	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	15					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	3×.,	38		
System Consideration Review	44	4%,	₩,	4¥,	44.	₩
Equipment Environmental Qualification Review			38, 38,		58,	5 % ,
Installed TMI Lessons Learned Implementation Equipment Summary	55	64				
Maintenance and Replacement Schedule Summary	76,	76,	26			

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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has not) provided a response to the SER concerns. X 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 gualification deficiencies. X The Licenses (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: X Equipment replacement with gualified 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 Ocher (The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation. X The Licensee (has/mas 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 (I.b) Modification III.a Exempt II.a Qualification Not Established III.b Not in Scope IV Documentation Not Available II.b Not Qualified

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 37

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Feak 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)

DESIGNATION: X = CATEGORY

NRC QUALIFICATION 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.

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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 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

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. 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, 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:

Contents	Chee	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	38.	36	M		
System Consideration Review	₩.,	纯,	ж,	44,	₩,	44
Equipment Environmental Qualification Review			¥¢, ¥,		54,	5X,
Installed TMI Lessons Learned Implementation Equipment Summary	ōá,	646				
Maintenance and Replacement Schedule Summary	76,	20,	76			

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EQUIPMENT	ENVIRONMENTAL	QUALIFICATION	REVIEW OF	EQUIPMENT	ITEM NO.	32

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
(a) International Action in the second state of the second stat
X The Licensee (has/has not) provided a response to the SER concerns.
X The Licensee (has/ has not) specifically stated 'dat the equipment is qualified and/or will function when exposed to he applicable DBE environmental service conditions.
The Licensee has presented information which shows there are no outstanding qualification deficiencies.
A The Licensee (has/ has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/ has not) been provided by the Licensee for this equipment item.
X Corrective action specified by the Licensee:
X 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.
X 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 III.b Not in Scope
II.b Not Qualified IV Documentation Not Available

FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 459

NRC Contract No. NRC-03-79-118

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 32

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Margia (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

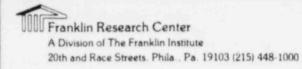
NRC QUALIFICATION CATEGORY

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	
II.c III.a III.b	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review	=

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

Page 3a

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.

<u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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

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

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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, QT, RT, P, H, CS, A, S, (R), M, I, W, RPN, EXN, SEN, QI, RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER 1b

Equipment Environmental Qualification Summary Forms 2 Licensee Response to NRC SER 3a, 36, 36, 38 4x, 4x, 4x, 4x, 4x, 4x, 4x System Consideration Review 34, 55, 56, 56, 56, 54, 54, Equipment Environmental Qualification Review 35, 36, 31, 35 64, 66 Installed TMI Lessons Learned Implementation Equipment Summary Maintenance and Replacement Schedule Summary 14, 14, 76

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

Ib

X The Licensee (has/has not) provide	d a response to the SER concerns.
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	
The Licensee has presented informa outstanding qualification deficien	
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment it	ation (has/ <u>has_not</u>) been provided by the em.
X Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	
Equipment relocation above Relocate or shield equipme	
Verify qualification by ad	ditional (testing/analysis)
Equipment relocation to a Qualification testing of e	
Other ()
that can be construed as a bas operation. X The Licensee (has/has not) pro corrective action. (Schedule action	
The Licensee states that the equip and/or should be exempted from en	pment item does not require qualification vironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3 of	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
I.a Qualified	II.c Qualified Life Deficiency
I.b Modification	III.a Exempt III.b Not in Scope
IT a Jualification Not Established	IV Documentation Not Available
II.a Qualification Not Established II.b Not Qualified	TA DOCUMENTATION NOT HAATTADIE
	iv Documentation not available

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 39

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 39

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Esta Aging Degradation Evaluated Adequately Qualified Lize or Replacement Schedule Established (If Requi Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure:	
 Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately 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

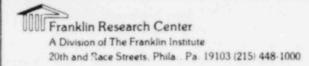
DESIGNATION: X = CATEGORY

Page

2

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.



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. 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

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4459

Page

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]

(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: Checksheet Page No. Contents la Equipment Item 1b Summary of Licensee Responses to the NRC SER 2 Equipment Environmental Qualification Summary Forms 3a, 36, 36, 34 Licensee Response to NRC SER the the the the the System Consideration Review 36, 36, 36, 36, 36, 36, 36, Equipment Environmental Qualification Review 34, 36, 36, 36, 34. Bar 36 Installed TMI Lessons Learned Implementation Equipment Summary 74, 76, 72 Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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	A Division of The Fran	klin Institu	te	
	20th and Race Streets.	Phila . Pa	19103 (215)	448-1000

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION	REVIEW OF EQUIPMENT ITEM NO. 40
SUMMARY OF LICENSEE RESPONSES TO THE NRC SE	R - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/has not) provided a r	esponse to the SER concerns.
X The Licensee (has/has-net) specifically qualified and/or will function when expensionmental service conditions.	
The Licensee has presented information outstanding qualification deficiencies.	
X The Licensee (has/has not) proposed a c item whose qualification has not been f	
X Justification for interim operation Licensee for this equipment item.	(has/has not) been provided by the
\underline{X} Corrective action specified by the	Licensee:
Equipment replacement with qual Equipment modification Equipment relocation above subm Relocate or shield equipment fr Verify qualification by additio Equipment relocation to a mild Qualification testing of equipm Other (ergence level om radiation source onal (testing/analysis) environment
The Licensee has provided other inf that can be construed as a basis fo operation.	
X The Licensee (has/harmon) provided corrective action. (Schedule for a action by september 198	accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from environm	
DESIGNATION OF RESULTANT NRC QUALIFICATION - CIRCLED ITEM ONLY: (See Section 3 of thi	
(I.b) Modification III II.a Qualification Not Established III	c Qualified Life Deficiency I.a Exempt I.b Not in Scope Documentation Not Available

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FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4.59

NRC Contract No. NRC-03-79-118

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 40

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Sacisfied 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.

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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. 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

NRC Contract No. NRC-C3-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

Page

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4/

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 -	- CII	RCLEI) IT	M(S)	ONI	: Y
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN,	SEN	N, @	RI	PS, 1	None	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	ckshe	et 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	¥,	×,	×		
System Consideration Review	34,	40	×	¥.	¥,	×
Equipment Environmental Qualification Review	94. 54.	× .	×;	**	90.	×,
Installed TMI Lessons Learned Implementation Equipment Summary	ba,	546				
Maintenance and Replacement Schedule Summary	7ú.	75	×			

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	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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4/1

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has not) provided a response to the SER concerns. X 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. X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X 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. X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective ly Sistember 1982 .) 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 Tib 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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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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4/1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS Documanted 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)

DESIGNATION:

NRC QUALIFICATION CATEGORY

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.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.

NRC Contract No. NRC-03-79-118FRC Project No. C5257FRC Assignment No. 13FRC Task No. 459

Page 3a

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

NRC Contract No. NRC-03-79-118 FRC Project No. 59257 FRC Assignment No. 13 FRC Task No. 459

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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 [22]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER -	CI	RCLEI) IT	EM (S)	ONI	: <u>Y</u> :
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN,	SEN	N, @	RI (PS, 1	None	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	Ж,	政,	×		
System Consideration Review	36.	4%,	*	*	36.	4×
Equipment Environmental Qualification Review	¥,	××.	XX	×.×	¥e,	¥,
Installed TMI Lessons Learred Implementation Equipment Summary	5¢.,	ğК				
Maintenance and Replacement Schedule Summary	36.	×.	*			

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	A Division	of	The	Franklin	Institu

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 42

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/has not) provided a response to the SER concerns.
X 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.
X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/ has not) been provided by the Licensee for this equipment item.
X Corrective action specified by the Licensee:
<u>X</u> 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.
X 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
(1.5) Modification III.a Exempt
II.a Qualification Not Established III.b Not in Scope
II.b Not Qualified IV Documentation Not Available

NRC Centract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 457

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 42

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
	V
Documented Evidence of Qualification Adequate	<u> </u>
Adequate Similarity Between Equipment and Test Specimen Establ	lished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	ed)
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	_
IT.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.

NRC Contract No. NRC-02-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

Page

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 -	CI	RCLEI	D IT	EM (S	ONI	: <u>Y</u> :
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN,	SE	N. Q	R) R	PS, 1	None	,
not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Che	cksh	eet	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1.6					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	×,	¥.,	34		
System Consideration Review	残,	λ×.,	*	74.	¥.,	×
Equipment Environmental Qualification Review	×.	**	XX	XX	×.	54.
Installed TMI Lessons Learned Implementation Equipment Summary	ðé,	56				
Maintenance and Replacement Schedule Summary	74.	7h.	*			

Franklin Research Center A Division of The Franklin Institute 20th a. d 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. 43 SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/bas mot) provided a response to the SER concerns. X The Licensee (has/bas mot) 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. X The Licensee (has/bas mot) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/bas mot) been provided by the Licensee for this equipment item.

X Corrective action specified by the Licensee:

- X 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.
- X The Licensee (has/tas 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 (.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

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 Tark No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43

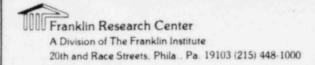
EQUIPMENT ENVIRONME TAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: <u>X = DEFICIENCY</u>
Documented Evidence of Qualification Adequate	_X
Adequate Similarity Between Equipment and Test Specimen Establ.	ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required	3)
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)	

DESIGNATION: X = CATEGORY

NRC QUALIFICATION CATEGORY

Equipment Qualified I.a Equipment Qualification Pending Modification X I.b ____ Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review Documentation Not Made Available V3



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

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 Ungualified 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. 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 -	CII	CLEI) ITI	EM (S)	ONI	LY:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN,	SEN	4.Q	RI	PS, N	lone	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	ckshe	et 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	×,	×,	3 6		
System Consideration Review	¥4,	₹¥.,	×,	₹£.,	*	×
Equipment Environmental Qualification Review	54, 54,	20,	××	XX	*	×,
Installed TMI Lessons Learned Implementation Equipment Summary	5¢.	9×				
Maintenance and Replacement Schedule Summary	Xe.	26	76			

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 Franklin Research Center A Division of The Franklin Institute FRC Assignment No. 13 20th and Race Streets, Phila, Pa. 19103 (215) 448-1000 FRC Task No. 459 EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 44 SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has not) provided a response to the SER concerns. X 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 gualification deficiencies.

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

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

X Corrective action specified by the Licensee:

X 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.

X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _ luy colember 1987

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 1.b Modification II.a Qualificacion Not Established II.b Not Qualified

II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available Page

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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. 44

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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)	

DESIGNATION: X = CATEGORY

NRC QUALIFICATION CATEGORY

Equipment Qualified I.a Equipment Qualification Pending Modification I.0 Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.C or Replacement Schedule Justified ____ III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review Documentation Not Made Available IV

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 & /IEW 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.

<u>Corrective Action - Surveillance and Preventive Maintenance Program</u> 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.

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

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, 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:

Checksheet Page Nc. Contents Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 38, 38, 38, 38 Licensee Response to NRC SER 44, X, 44, 48, 48, 48 System Consideration Review 34, 38, 34, 54, 58, 58, Equipment Environmental Qualification Review 35, 3k, 34, 35 64, 6K Installed TMI Lessons Learned Implementation Equipment Summary the, 7%, 7% Maintenance and Replacement Schedule Summary

A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000	FRC Assignment No. 13	
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITE	M NO. 45

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has not) provided a response to the SER concerns.

- X 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 gualification deficiencies.
- X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - \times Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
 - X Corrective action specified by the Licensee:
 - X 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.
 - X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective Systemher 1982 action ren _.)

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

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

	Qualified			
L.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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Esta Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requi Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure: o Peak Temperature Adequate	ired)
 Peak Pressure Adequate Duration Adequate 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)	

DESIGNATION: X = CATEGORY

NRC QUALIFICATION CATEGORY

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

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. 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.

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UUUU	Franklin Research	Cente	er				
	A Division of The Frank	klin Inst	itute				
	20th and Race Streets.	Phile .	Pa	19103	(215)	448-1000	0

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. 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) UNLI.
(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:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 36, 36, 34
System Consideration Review	3a, 36, 36, 36 36, 44, 46, 46, 46, 46, 46
Equipment Environmental Qualification Review	56. 36. 56. 56. 56. 56. 56. 56. 56. 56. 51
Installed TMI Lessons Learned Implementation Equipment Summary	施, 好
Maintenance and Replacement Schedule Summary	Ja, 36, 36

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. <u>459</u>	Pag Ib
QUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITE	EM NO. <u>4</u>
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE	APPLICABL
X The Licensee (has/has not) provide	a response to the SER concerns	
The Licensee (has/has not) specific qualified and/or will function whe environmental service conditions.		15
The Licensee has presented information outstanding qualification deficies		
The Licensee (has/has not) propose item whose qualification has not b		equipment
X Justification for interim oper Licensee for this equipment in		ed by the
Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification	h qualified equipment	
Equipment relocation abov		
Relocate or shield equipm Verify qualification by a	ditional (testing/analysis)	
Equipment relocation to a Qualification testing of		
Other (quipment in progress)
	er information for this equipment sis for justification for interin	
	ovided a schedule for the propose for accomplishing the corrective be 1982	
The Licensee states that the equi and/or should be exempted from en	pment item does not require qual vironmental qualification.	ification
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		ON REVIEW
I.a Qualified I.b Modification	II.c Qualified Life Deficien	су
	III.a Exempt III.b Not in Scope	
II.a Qualification Not Established		

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

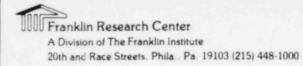
EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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	



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. 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.

Rep sement 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.

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

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]

(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: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 Licensee Response to NRC SER 3a, 30, 36, 34 System Consideration Review 46, 48, 48, 48, 48, 48 Equipment Environmental Qualification Review 5th, 5th, 5th, 5th, 5th, 5th, 5th, 5x, 5x, 5x, 53 Installed TMI Lessons Learned Implementation 6x, 68 Equipment Summary Maintenance and Replacement Schedule Summary 70, 70, 70,

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

SUMMARY OF LICENSEE RESPONSES TO THE NE	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informat outstanding qualification deficience	
The Licensee (has/has not) proposed item whose qualification has not be	a corrective action for this equipment een fully established.
Justification for interim opera Licensee for this equipment ite	ation (has/has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	
Equipment relocation above Relocate or shield equipment	submergence level
Verify qualification by add	ditional (testing/analysis)
Equipment relocation to a m	
Qualification testing of eq Other (jurpment in progress
	r information for this equipment item is for justification for interim
	vided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equips and/or should be exempted from envi	ment item does not require qualification ironmental qualification.
	TION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3 of	f this TER for Legend)
I.a Qualified	II.c Qualified Life Deficiency
I.b Modification II.a Qualification Not Established	III.a Exempt III.b Not in Scope
II.b Not Qualified	IV Documentation Not Available
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NRC QUALIFICATION CATEGORY

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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)

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 Lif	e
	or Replacement Schedule Justified	
III.a	Equipment Exempt From Qualification	
II1.b	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4-59

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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)

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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 .	- CI	RCLEI) IT	EM (S)	ONI	Y:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN,	SEI	N, @	RI	PS, 1	lone	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chee	ckshe	et 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	16					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	ж,	34,	31		
System Consideration Review	₩,	48.	¥8.,	44,	46.,	×
Equipment Environmental Qualification Review		936, 578,			% ,	₹,
Installed TMI Lessons Learned Implementation Equipment Summary	5%	676				
Maintenance and Replacement Schedule Summary	私,	78,	*			

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. 48
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.		
The Licensee has presented information outstanding qualification deficier		
X The Licensee (has/ has not) propose item whose qualification has not b	ed a corrective action for this equ been fully established.	ipment
X Justification for interim oper Licensee for this equipment it	ration (has/ has_not) been provided tem.	by the
X Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ac Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment)
	er information for this equipment i sis for justification for interim	tem
X The Licensee (has/has not) pro corrective action. (Schedule action SEPTEMBER, 198	ovided a schedule for the proposed for accomplishing the corrective 32)
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualifivity vironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC. - CIRCLED ITEM ONLY: (See Section 3 of		REVIEW
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 Availab	le

FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 459

NRC Contract No. NEC-03-79-118

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Reyarding 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.D	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. 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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _______9

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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]

(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: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 3k, 3k, 3k Licensee Response to NRC SER System Consideration Review 46, 46, 4K, 4K, 48, 4K, MS Equipment Environmental Qualification Review 36, 38, 38, 58, 38, 36, \$4, 3h, \$X, \$X 62, 68 Installed TMI Lessons Learned Implementation Equipment Summary Maintenance and Replacement Schedule Summary 36, 78, 78

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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. 49

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHE "ED ITEMS ARE APPLICABLE:
X The Licensee (has/ has not) provided a response to the SER concerns.
X 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.
X The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
X Corrective action specified by the Licensee:
Z 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.
X The Licensee (has/h as not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action <u>SEPTEMBER</u> , 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
II.a Qualification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available

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. 49

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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	<u>×</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.D IV	Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	_

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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.

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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]

(See Section 3 of this TER for Legend) R, T, QT, RT, P, H, CS, (A) S, (R), M, I, UM, RPN, EXN, SEN, QI, RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Contents Checksheet Page No. la Equipment Item Summary of Licenses Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 38, 38, 38 Licensee Response to NRC SER 48, 48, 48, 48, 48, 48, 48 System Consideration Review 58, 98, 58, 58, 58, 58, Equipment Environmental Qualification Review 59, 5%, 5%, 5% Installed TMI Lessons Learned Implementation 63, 68 Equipment Summary Maintenance and Replacement Schedule Summary 72 78, 76

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Fa 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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Ib

SUMMARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provided a	a response to the SER concerns.
X The Licensee (has/ has not) specifical qualified and/or will function when environmental service conditions.	
The Licensee has presented information outstanding qualification deficiencies	
X The Licensee (has/had not) proposed (item whose qualification has not been	
X Justification for interim operat Licensee for this equipment item	ion (has/ has not) been provided by the .
X Corrective action specified by t	he Licensee:
<pre>X Equipment replacement with q Equipment modification Equipment relocation above s Relocate or shield equipment Verify qualification by addi Equipment re ocation to a mi Qualification testing of equ Other (</pre>	ubmergence level from radiation source tional (testing/analysis) ld environment
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
/	982 refucting outrage .)
The Licensee states that the equipme and/or should be exempted from envir	nt item does not require qualification onmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATI - CIRCLED ITEM ONLY: (See Section 3 of	
I.a Qualified Modification II.a Qualification Not Established II.b Not Qualified	<pre>II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available</pre>

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

NRC Contract 2. NRC-03-79-118 FRC Project 20. C5257 FRC Assignment No. 13 FRC Task No. 459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

EQUIFMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure:	
o Peak Semperature Adequate o Peak Pressure Adequate	
 Duration Adequate Required Profile Enveloped Adequately 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)	=
orrection instanting instantion (instant or or of a	

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.D	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	

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. 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.

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. 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, 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:

Contents	Chee	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NAC SER	16					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	ж,	36,	34		
System Consideration Review	400	48.	₩,	4d.,	¥6.,	×
Equipment Environmental Qualification Review			*, *,		∞,	¥,
Installed TMI Lessons Learned Implementation Equipment Summary	9 % ,	86				
Maintenance and Replacement Schedule Summary	75	28.	x			

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	20th and Race Streets.	Phila .	Pa	19103	(215)	448	1066	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5/		
SUMMARY OF LICENSEE RESPONSES TO THE NR	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE:	
X The Licensee (has/has not) provided	a response to the SER concerns.	
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.		
The Licensee has presented informat outstanding qualification deficience		
X The Licensee (has/ has not) proposed item whose qualification has not be	a corrective action for this equipment een fully established.	
Justification for interim opera Licenses for this equipment ite	ation (has/h as not) been provided by the em.	
X Corrective action specified by	the Licensee:	
X Equipment replacement with Equipment modification	qualified equipment	
Equipment relocation above	submergence level	
Relocate or shield equipment	nt from radiation source	
Verify qualification by add Equipment relocation to a m	litional (testing/analysis)	
Qualification testing of ec Other (quipment in progress	
- Here all have been a second and	r information for this equipment item is for justification for interim	
X The Licensee (has/nas not) prov corrective action. (Schedule) action	for accomplishing the corrective	
The Licensee states that the equips and/or should be exempted from envi	ment item does not require qualification ironmental qualification.	
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o	TION EVALUATION CATEGORY BASED ON REVIEW	
I.a Qualified (I.b) Modification	II.c Qualified Life Deficiency III.a Exempt	
II.a Qualification Not Established	III.a Exempt III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Available	

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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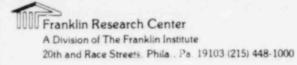
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 51

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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	



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

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 Ungualified 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.

A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-0:'-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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-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]

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, RFN, EXN, SEN, QI, RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Contents Checksheet Page No. Equipment Item la Sur ary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 3x, x, xa Licensee Response to NRC SFR 40, 40, 16, 10, 40, 40 System Consideration Review Equipment Environmental Qualification Review 54, 54, 58, 54, 54, 54, 54, 30, 5%, 5%, 3% DE DE Installed TMI Lessons Learned Implementation Equipment Summary Maintenance and Replacement Schedule Summary 74, 75, 75

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.

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QUIP	MENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.
SUMMAS	AY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X Tr	e Licensee (has/ has not) provided a response to the SER concerns.
qu	e Licensee (has/h <u>as not)</u> specifically stated that the equipment is alified and/or will function when exposed to the applicable DBE avironmental service conditions.
	e Licensee has presented information which shows there are no itstanding qualification deficiencies.
	e Licensee (has/ has no t) proposed a corrective action for this equipment em whose qualification has not been fully established.
2	Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
1	Corrective action specified by the Licensee:
	X Equipment replacement with qualified equipment
	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.
1	The Licensee (has/ nas not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, 1982 Refueling Outage)
Th	e Licensee states that the equipment item does not require qualification
ar	d/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 (.5) Modification II.a Qualification Not Established III.b Not in Scope II.b Not Qualified

II.c Qualified Life Deficiency III.a Exempt IV Documentation Not Available 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. 52

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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)

DESIGNATION: X = CATEGORY

NRC QUALIFICATION 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.

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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. 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. 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]

(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: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 3%, 38, 3% Licensee Response to NRC SER 4a, 4b, 4c, 4d, 5x, AK System Consideration Review >4, >4, 54, 54, 34, 54, 58, Equipment Environmental Qualification Review 3. 3. 3. 3. 3 Installed TMI Lessons Learned Implementation 10, 6% Equipment Summary tx, tx, tx Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

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FRC Project No. C5257
FPC Assignment No. 13
FRC Task No. 459

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EQUIPMENT	ENVIRONMENTAL	QUALIFICATION	REVIEW OF	EQUIPMENT	TEM NO.	53

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X 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 ()
X 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)
X 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 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. 53

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FC.RM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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)

DESIGNATION:

NRC QUALIFICATION CATEGORY

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

MILD ENVIRONMENT

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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 barsh 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 <u>not</u> 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." 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.

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.

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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)

X Other (see page4b-c)

Kesultant NRC Qualification Evaluation Category (IIIa(IIIb))

X Note 1: The Licensee (has/ nas 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 33

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

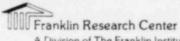
Although not explicitly stated, the Licensee's position is believed to be that the small piping break which the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no effect on the FWCI equipment. **I**tis 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, i + 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. 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, 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:

DISTING OF APPLICABLE CREEKSREETS.						
Contents	Chec	ckshe	et l	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	36.	30		
System Consideration Review	致	40	44	4d,	ye.	4
Equipment Environmental Qualification Review					76,	
Installed TMI Lessons Learned Implementation Equipment Summary	6a.	₿¥°				
Maintenance and Replacement Schedule Summary	×e.	<u></u> зб,	⋟			

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 54 SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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 .) X The Licensee states that the equipment 'tem 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 [III.b Not in Scope] II.b Not Qualified IV Documentation Not Available



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DESIGNATION: X = DEFICIENCY

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 54

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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 Stern 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

Equipment Qualified

I.a

I.b

II.a

X = CATEGORYEquipment Qualification Pending Modification _____ ____ Equipment Qualification Not Established

DESIGNATION:

Equipment Not Qualified II.b Equipment Satisties All Requirements Except Qualified Life II.C or Replacement Schedule Justified Equipment Exempt From Qualification III.a

III.b Equipment Not in the Scope of the Qualification Review Documentation Not Made Available IV

MILD ENVIRONMENT

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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.

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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: Contents Checksheet Page No.

la Equipment Item 16 Summary of Licensee Responses to the NRC SER 2 Equipment Environmental Qualification Summary Forms 3a, 36, 36, 34 Licensee Response to NRC SER ¥6, ¥6, ¥4, ¥4, ¥4, ¥ System Consideration Review x, x, x, x, x, k, x, Equipment Environmental Qualification Review 55, BK Installed TMI Lessons Learned Implementation Equipment Summary Xa. 36. 7¢ Maintenance and Replacement Schedule Summary

A Division of The Franklin Institute 20th and Race Stree's Phila. Pa 19103 (215) 448-1000	NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>	Page 1b
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 55
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE API	PLICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	
The Liconsee has presented information outstanding qualification deficier		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equi been fully established.	pment
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided b cem.	by the
Corrective action specified by	the Licensee:	
Equipment relocation to a Qualification testing of e	e submergence level ent from radiation source dditional (testing/analysis) mild environment)
	r information for this equipment it is for justification for interim	em
	vided a schedule for the proposed for accomplishing the corrective	.)
X The Licensee states that the equip and/or should be exempted from env	ment item does not require qualific ironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o		EVIEW
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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 55

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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	1
o Duration Adequate	i.
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

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	and a reaction of the state of the
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

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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.



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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:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, X, Xe, Xa
System Consideration Review	4 x x x x x x x
Equipment Environmental Qualification Review	後、後、後、私、後、 後、後、後、私、後、後 後、後、後、私、後、美
Installed TMI Lessons Learned Implementation Equipment Summary	×é, ×6
Maintenance and Replacement Schedule Summary	× ×. ×

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5%

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X 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 Licensse 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 Qualification Not Established III.b Not Qualified IV Documentation Not Available

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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

Equipment Qualified	
Equipment Qualification Pending Modification	
Equipment Qualification Not Established	
Equipment Not Qualified	
Equipment Not in the Scope of the Qualification Review	
Documentation Not Made Available	
	Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review

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

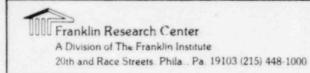
Page 3a

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.



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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:

Contents

Equipment Item

Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER System Consideration Review Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

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

QUI	PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.
UMM	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X	The Licensee (has/kas 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 ()
6	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.
	NATION OF RESULTANT NRC QUALIFICATION FUALUATION CATEGORY BASED ON REVIEW
CII	CLED ITEM ONLY: (See Section 3 of this TER for Legend)
a	Qualified II.c Qualified Life Deficiency
b	Modification Ill.a Exempt
	Qualification Not Established TILb Not in Scope
1.0	Not Qualified IV Documentation Not Available

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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

DESIGNATION: X = CATEGORY

NRC REQUIREMENTS

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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

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.D	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	_ <u>×</u> _
IV	Documentation Not Made Available	

MILD ENVIRONMENT

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

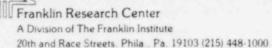
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 57

LICENSEE RESPONSE TO NRC SER

4. Environmental Protection/Enclosures

This equipment is exempt from qualification because it h s 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.





NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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, 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:

17	-	÷	-	-	-	-
Co	n	с.	P	n	т.	54

Checksheet Page No.

la Equipment Item Summary of Licensee Responses to the NRC SER lb Equipment Environmental Qualification Summary Forms 2 3a, 3k, 3c, 3d Licensee Response to NRC SER 36, 3K, 3K, 4th, 4k, 4k, 4k System Consideration Review Sec. 56, 50, 50, 50, 50, 36, Equipment Environmental Qualification Review 35, 58, 56, 55 50, 65 Installed TMI Lessons Learned Implementation Equipment Summary 76, 76, 70 Maintenance and Replacement Schedule Summary

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	A Division of The Fran	klin Inst	titute	e		
	20th and Race Streets	Phila	Pa	19103	(215)	448-1000

EQUIPMENT ENVIRONMENTAL	QUALIFICATION REVIEW	OF EQUIPMENT ITEM NO.	58
			-

SUMM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X	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 gualification has not been fully established.
	Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
5	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.
_	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
.b I.a	Qualified II.c Qualified Life Deficiency Modification Not Established III.a Exempt Not Qualified IV Documentation Not Available

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. ______59____

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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

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

Page 2

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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 3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

LICENSES 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 lecter and Section B.6 of this report.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

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 Submittel: Page XI-2 [27]

DESIGNATION		FOR	DE	DEFICIENCY		IDENTIFIED		SY	THE	NRC	SER	-	CIRCLED	ITEM (S	S)	ONLY
(See Sect	ion	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:

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Checksheet Page No.

Equipment Item	la	
Summary of Licensee Responses to the NRC SER	1b	
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Licensee Response to NRC SER	3a, 36,	*, 34
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Equipment Environmental Qualification Review	54, 56, 54, 54,	54, 54, 56, ×, ×, ×
Installed TMI Lessons Learned Implementation Equipment Summary	76. AK	
Maintenance and Replacement Schedule Summary	76, 76,	76

A Division of The Franklin Institute 20th and Bare 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. 59						
SUMMARY OF LICENSEE RESPONS	SES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:					
X The Licensee (has/has n	ot) provided a response to the SER concerns.					
	not) specifically stated that the equipment is function when exposed to the applicable DBE conditions.					
The Licensee has presen outstanding qualificati	ted information which shows there are no on deficiencies.					
	ot) propos i a corrective action for this equipment on has not been fully established.					
Justification for i Licensee for this e	nterim operation (has/has not) been provided by the quipment item.					
Corrective action s	pecified by the Licensee:					
Equipment modif Equipment reloc Relocate or shi Verify qualific Equipment reloc	cement with qualified equipment ication ation above submergence level eld equipment from radiation source ation by additional (testing/analysis) ation to a mild environment esting of equipment in progress					
the second se	ovided other information for this equipment item ed as a basis for justification for interim					
corrective action.	as not) provided a schedule for the proposed (Schedule for accomplishing the corrective					
	t the equipment item does not require qualification ed from environmental qualification.					
	C QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW Section 3 of this TER for Legend)					
a Qualified b Modification I.a Qualification Not Estal I.b Not Qualified	II.c Qualified Life Deficiency III.a Exempt JIII.b Not in Scope IV Documentation Not Available					

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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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

DESIGNATION:

X = CATEGORY

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

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.b	Equipment Not Qualified	and the second se
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	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-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 459

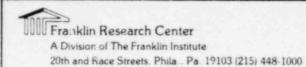
Page 3a

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.



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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, 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: Contents Checksheet Page No. Equipment Item la Summary of Licensee Responses to the NRC SER lb Equipment Environmental Qualification Summary Forms 2 3a, 35, 36, Xa Licensee Response to NRC SER 16, 16, 16, 16, 16, 16 System Consideration Review \$4, \$6, \$6, \$6, \$6, \$K, X, \$6, \$6, \$6, \$5, \$5, \$6, \$7, Equipment Environmental Qualification Review 84, 56 Installed TMI Lessons Learned Implementation Equipment Summary 36. 76. 7% Maintenance and Replacement Schedule Summary

1000	Franklin Research Center	
	A Division of The Franklin Institute	
	20th and Race Streets. Phila. Pa. 19103 (215) 448-1000	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 60

CHANNEY OF LICENCEP DECRONCER TO THE	NDO COD - ONLY CURCERD THENE ADD ADDITCADED
SUMMARI OF LICENSEE RESPONSES TO THE P	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
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The Licensee (has/has not) provide	ed a response to the SER concerns.
The Licensee (has/has not) specifi	ically stated that the equipment is
qualified and/or will function whe	
environmental service conditions.	
The Licensee has presented informa	
outstanding qualification deficien	icles.
The Licensee (has/has not) propose	ed a corrective action for this equipment
item whose qualification has not b	
	ration (has/has not) been provided by the
Licensee for this equipment it	:em.
Corrective action specified by	the Licensee.
our section spectrice by	the brochoes.
Equipment replacement with	qualified equipment
Equipment modification	
Equipment relocation above	
Relocate or shield equipme	
Equipment relocation to a	dditional (testing/analysis)
Qualification testing of e	
Other ()
	er information for this equipment item
	is for justification for interim
operation.	
The Licensee (has/has not) pro	wided a schedule for the proposed
and/or should be exempted from env	ironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICA	TION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3 o	
I.a Qualified	II.c Qualified Life Deficiency
II.D NOT QUALIFIED	Documentation Not Available
<pre>that can be construed as a bas operation.</pre>	sis for justification for interim wided a schedule for the proposed for accomplishing the corrective .) ment item does not require qualification vironmental qualification. <u>ATION EVALUATION CATEGORY BASED ON REVIEW</u> of this TER for Legend)

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 45-9

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EQUIPMENT ENVIRONMENTAL QUALIFICATION (EVIEW OF EQUIPMENT ITEM NO. 60

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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

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

MILD ENVIRONMENT

A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6/

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]

(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN	, SEN	1, QI	2	s, N	lone,	Ċ,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Chec	ckshe	eet I	Page	No.	
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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,	30,	×	34		
System Consideration Review	4a,	4b,	4c,	4%	40%	4
Equipment Environmental Qualification Review		5%, 5%,		5%, 5%	≸e,	3%
Installed TMI Lessons Learned Implementation Equipment Summary	6/2	6)6				
Maintenance and Replacement Schedule Summary	7.2.	75.	75			

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. <u>61</u>
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APPI	LICABLE:
K The Licensee (has/bas-not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented informa outstanding qualification deficien		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equip been fully established.	ment
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by em.	the
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification	qualified equipment	
Equipment relocation above	Submergence level	
Relocate or shield equipme		
	ditional (testing/analysis)	
Equipment relocation to a Qualification testing of e		
	quipment in progress	_)
	er information for this equipment ite is for justification for interim	m
	vided a schedule for the proposed for accomplishing the corrective .)	
The Licensee states that the equip and/or should be exempted from env		ition
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o		VIEW
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	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -

nd Race Streets, Phila., Pa. 19103 (233) 440-

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQU. REMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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

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

MILD ENVIRONMENT

3

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

Page . 3a

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it is <u>not</u> 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."

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1.1

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

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- 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)

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.
- failure criterion. See note (1) _____ Requirement for continued functionon page 4b. (NRC Qualification Evaluation Category IIIa) _____ period necessitates environmental qualification.

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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 46)
- X Resultant NRC Qualification Evaluation Category (
- 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 3cc)

Reason for Non-Concurrence

- The equipment's accident mitigating function is completed 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.
- Note 1: The Licensee (here/ ____ The rationale presented by the Licensee is not supported by the primary equipment will not _____ objective technical evidence.
 - ____ Other (see page___)

LICENSEE STATEMENT

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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.

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Page 4c

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

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. **I**+1s 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, i + 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.

NRC Contract No. NRC-03-79-11
FRC Project No. C5257
FRC Assignment No. 13
FRC Taski o. 459

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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, 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: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 38, X, 34 Licensee Response to NRC SER \$x \$K, \$K, \$x \$k, \$k System Consideration Review * * * * * * * Equipment Environmental Qualification Review ¥, X, X, X Ba BK Installed TMI Lessons Learned Implementation Equipment Summary 76, 76, 76 Maintenance and Replacement Schedule Summary

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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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 62
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	PLICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equi been fully established.	pment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided b tem.	by the
Corrective action specified b	by the Licensee:	
Equipment replacement wit Equipment modification		•
Equipment relocation abov Relocate or shield equipm	e submergence level Ment from radiation source	
Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to a Qualification testing of		
Other ()
	er information for this equipment in asis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective	.)
The Licensee states that the equi and/S should be exempted from en		cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
I.a Qualified I.b Modification	II.c Qualified Life Deficiency III.a Exempt	
II.a Qualification Not Established II.b Not Qualified	IV Documentation Not Availabl	e

NRC Contract No. NRC-03-79-11
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

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

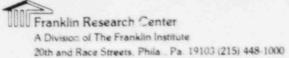
DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Required) Program Established to Identify Aging 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)

DESIGNATION: X = CATEGORY

NRC QUALIFICATION 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.D	Equipment Not in the Scope of the Qualification Review	X
IV	Documentation Not Made Available	

MILD ENVIRONMENT



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

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 - Dechat

NRC DOCKET NO 50-245 NRC TAC NO. 42523 NRC CONTRACT NO. NRC 03-79-118

FRC PROJECT C5257 FRC ASSIGNMENT 13

FRC TASK 459

Prepared by

Franklin Research Center 20th and Race Street Philadelphia, PA 19103

FRC Group Leader: C. J. Crane

Prepared for

Sec. 40'

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

NRC DOCKET NO. 50-245 NRC TAC NO. 42523 NRC CONTRACT NO. NRC-03-79-118 FRC PROJECT C5257 FRC ASSIGNMENT 13 FRC TASK 459

Prepared by

Franklin Research Center 20th and Race Street Philadelphia, PA 19103

Prepared for

Nuclear Regulatory Commission Washington, D.C. 20555 FRC Group Leader: C. J. Crane

Lead NRC Engineer: N. B. Le

P. Shemanski

May 28, 1982

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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. 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]

(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: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER 15 2 Equipment Environmental Qualification Summary Forms 3a, Xa, Xe, Xé Licensee Response to NRC SER 4a, 4b, 4c, 10, 10, 10, 1 System Consideration Review * * * * * * Equipment Environmental Qualification Review 62, 62 Installed TMI Lesson; Learned Implementation Equipment Summary 36. 36. 78 Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

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 No59	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM N	0.63
SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPL	ICABLE:
X The Licensee (has/has not) provide	d a response to the SER concerns.	
The Licensee (bas/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is n exposed to the applicable DBE	
The Licensee has presented informa outstanding qualification deficient		
The Licensee (has/has not) propose item whose qualification has not be	d a corrective action for this equip een fully established.	ment
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by em.	the
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification	qualified equipment	
Equipment relocation above	submergence level	
Relocate or shield equipme	nt from radiation source	
Verify qualification by ad Equipment relocation to a		
Qualification testing of e		
Other (_)
	r information for this equipment iter is for justification for interim	n
	vided a schedule for the proposed for accomplishing the corrective)	
.X The Licensee states that the equip and/or should be exempted from env	ment item does not require qualification.	tion
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o		VIEW
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	

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

NRC QUALIFICATION CATEGORY

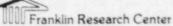
DESIGNATION: X = DEFICIENCY

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)	
or source indianand inside a second frame and the second s	

DESIGNATION: X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.b	Equipment Not Qualified	
I1.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	

MILD ENVIRONMENT



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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6.3

LICENSEE RESPONSE TO NRC SER

"This equipment is exempt from qualification because it is <u>not</u> 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."

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _457

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

- 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)

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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _459

Page 4b

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)
- X Other (see page 46)
- X Resultant NRC Qualification Evaluation Category (LTM / IIIb)
- X Note 1: The Licensee (here/ 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 relinguish 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.

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

Page 4c

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

SYSTEM CONSIDERATION REVIEW

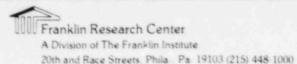
EVALUATION OF LICENSES STATEMENT (Continued)

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. **I**+1s 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, i + 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.



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

la

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:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 36, 36, 38
System Consideration Review	**. **. **. **. **. **
Equipment Environmental Qualification Review	\$4, \$6, \$6, \$6, \$6, \$6, \$6, \$6, \$6, \$6, \$6
Installed TMI Lessons Learned Implementation Equipment Summary	56. 3×0
Maintenance and Replacement Schedule Summary	74, 36, 36

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 64
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has hor) provide	ed a response to the SER concerns.	
qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propositem whose qualification has not	ed a corrective action for this equ been fully established.	ipment
X Justification for interim ope Licensee for this equipment i	ration (has /has-not) b een provided tem.	by the
X Corrective action specified b	y the Licensee:	
X Equipment replacement with Equipment modification		
Equipment relocation above Relocate or shield equipment	e submergence level ent from radiation source	
Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to aQualification testing of		
Other (edarbuene zu brodress)
	er information for this equipment i sis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective	.)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualific vironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	A REAL PROPERTY OF A REAL PROPER	REVIEW
I.a Qualified	II.c Qualified Life Deficiency	
Modification	III.a Exempt	
II.a Qualification Not Established II.b Not Qualified	III.b Not in Scope IV Documentation Not Availabl	e

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>-459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 44

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

	3
Documented Evidence of Qualification Adequate	<u> </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	1.1.1
I.b	Equipment Qualification Pending Modification	_X
II.a	Equipment Qualification Not Established	
II.D	Equipment Not Qualified	
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	
*** -	Equipment Exempt From Qualification	
III.a		
III.D	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. 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.



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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Chec	cksh	eet	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	340,	356.	334		
System Consideration Review	4a,	4b,	4c,	私	₩,	4
Equipment Environmental Qualification Review	始,此	510, 54,	5x, 3x,	5%. 50	3¢.	*
Installed TMI Lessons Learned Implementation Equipment Summary	6a.	96				
Maintenance and Replacement Schedule Summary	76,	710,	te			

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM N	10.65
SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPI	ICABLE:
X The Licensee (has/has not) provide	d a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented informa outstanding qualification deficien		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equip been fully established.	ment
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by em.	the
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification		
Equipment relocation above Relocate or shield equipme	submergence level	
Verify qualification by ad	ditional (testing/analysis)	
Equipment relocation to a	mild environment	
Qualification testing of e Other ()
	er information for this equipment ite is for justification for interim	m
	ovided a schedule for the proposed for accomplishing the corrective .)	
X The Licensee states that the equip and/or should be exempted from env		tion
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of	The second se	VIEW
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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Established	i.
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required)	
Program Established to Identify Aging Degradation	L
Criteria Regarding Aging Simulation Satisfied (If Required)	J
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	1
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

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.D	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	X
VI	Documentation Not Made Available	

MILD ENVIRONMENT

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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 <u>not</u> 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."

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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

- 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)
- <u>X</u> 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.

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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)
- X Other (see page 46)
- X Resultant NRC Qualification Evaluation Category (DETIIIb)
- X Note 1: The Licensee (brack 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 relinguish 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6.5

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, i + 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. A Division of The Franklin Institute 20th and Race Streets, Phila, Pa. 19103 (215) 448-1000

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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]

Maintenance and Replacement Schedule Summary

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, EXX	N, SEN, QI, RPS, None,
Not stated, Not applicable	
LISTING OF APPLICABLE CHECKSHEETS:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	16
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 30, 30, 30, 30
System Consideration Review	42, 4b, 4c, 4d, 4e, 41
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, 6b

7a, 7b, 7c-

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 66
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPI	LICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function whi environmental service conditions.		
The Licensee has presented inform outstanding qualification deficies		
The Licensee (has/has not) propose item whose qualification has not h	ed a corrective action for this equip been fully established.	pment
Justification for interim oper Licensee for this equipment is	ration (has/has not) been provided by tem.	/ the
Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by a Equipment relocation to a	e submergence level ent from radiation source dditional (testing/analysis)	
Qualification testing of Other (equipment in progress)
	er information for this equipment ite sis for justification for interim	ŧm
	ovided a schedule for the proposed for accomplishing the corrective .)	
X The Licensee states that the equipand/or should be exempted from en		ition
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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

MILD ENVIRONMENT

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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.

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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 -	CIF	CLED	ITH	M(S)	ONI	Y:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN,	SEN	I, QI	, PF	PS, N	lone,	
Not stated, Not applicable						
LISTING ON APPLICABLE CHECKSHEETS:						
Contents	Chec	ck she	et I	Page	Nc.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	36,	3,1		
System Consideration Review	46.	纯,	4¢.,	4d,	¥4.	¥
Equipment Environmental Qualification Review			×	× ×	×.	×.
Installed TMI Lessons Learned Implementation Equipment Summary	5á,	×				
Maintenance and Replacement Schedule Summary	ye.	76.	×			

A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-10	NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>4.59</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUAL	IFICATION REVIEW OF EQUIPMENT ITEM	NO. 67
SUMMARY OF LICENSEE RESPONSES TO T	HE NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) pro	vided a response to the SER concerns.	
	cifically stated that the equipment is when exposed to the applicable DBE ns.	
The Licensee has presented inf outstanding qualification defi	ormation which shows there are no ciencies.	
The Licensee (has/has not) pro item whose qualification has n	posed a corrective action for this equ ot been fully established.	ipment
Justification for interim Licensee for this equipmen	operation (has/has not) been provided (t item.	by the
Corrective action specifie	d by the Licensee:	
Equipment modification Equipment relocation a Relocate or shield equ Verify qualification b Equipment relocation to	bove submergence level ipment from radiation source y additional (testing/analysis))
	other information for this equipment is basis for justification for interim	tem
	provided a schedule for the proposed ule for accomplishing the corrective	.)
The Licensee states that the end/or should be exempted from	quipment item does not require qualific environmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALI - CIRCLED ITEM ONLY: (See Section	FICATION EVALUATION CATEGORY BASED ON 1 3 of this TER for Legend)	REVIEW
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	e

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NRC QUALIFICATION CATEGORY

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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)

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 Neplacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review IV Docementation Not Made Available

MILD ENVIRONMENT

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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.

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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, 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: Checksheet Page No. Contents Equipment Item la 1b Summary of Licensee Responses to the NRC SER 2 Equipment Environmental Qualification Summary Forms 3a, 3× 16, 18 Licensee Response to NRC SER the the the the the the System Consideration Review 54, 96, 54, 94, 96, ¥, 54, 56, 74, 54 Equipment Environmental Qualification Review 5/2, 5× Installed TMI Lessons Learned Implementation Equipment Summary X. X. X Maintenance and Replacement Schedule Summary

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EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. 68
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE:
X The Licensee (has/has not) provide	a response to the SER concerns.	
		10.000
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	ically stated that the equipment is an exposed to the applicable DBE	
The Licensee has presented informa outstanding qualification deficien		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equippeen fully established.	pment
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by em.	the
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (e submergence level from radiation source ditional (testing/analysis) mild environment equipment in progress	
The Licensee has provided othe that can be construed as a bas operation.	er information for this equipment ite ais for justification for interim	m
The Licensee (has/has not) pro corrective action. (Schedule action	ovided a schedule for the proposed for accomplishing the corrective	
The Licensee states that the equip and/or should be exempted from env	oment item does not require qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		EVIEW
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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

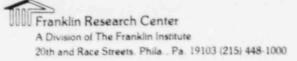
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Required) Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/P. essure 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



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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.

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

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 S' & - 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: Caecksheet Page No. Contents la Equipment Item Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 36, 34, 34 Licenses Response to NRC SER 4a, 4b, 4c, 44, 44, 44 System Consideration Review 34, 36, 36, 36, 36, 36, 36, Equipment Environmental Qualification Review 35. 36. 34, 35 Installed TMI Lessons Learned Implementation 64, 65 Equipment Summary Var 76- 76 Maintenance and Replacement Schedule Summary

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 69
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.	-	
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equi been fully established.	pment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided b tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification	h qualified equipment	
Equipment relocation abov	e submergence level	
Relocate or shield equipm	ent from radiation source	
	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of Other (equipment in progress)
	er information for this equipment it sis for justification for interim	em
	ovided a schedule for the proposed for accomplishing the corrective)
The Licensee states that the equi and/or should be exempted from en		ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Mudification	III.a Exempt	
II.b Not Qualified	IV Documentation Not Available	

NRC QUALIFICATION CATEGORY

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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 Est	ablished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requ	ired)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
riteria 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	
Criceria 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)	

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.

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 <u>not</u> 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."

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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

1

- 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) ____ Requirement for continued functionon 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 gualified 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.
- ing throughout the post-accident period necessitates environmental qualification.

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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)
- X Other (see page 44-)
- A Resultant NRC Qualification Evaluation Category (IIIa/(IIb))
- 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. 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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

SYSTEM CONSIDERATION REVIEW

EVALUATION OF LICENSEE STATEMENT (Continued)

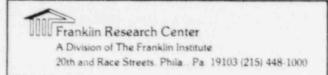
Although not explicitly stated, the Licensee's position is believed to be that the small piping break whic' the FWCI is designed to mitigate is a break in any of the small liquid lines within the containment, which are unisolable, and while FWCI performance is required, the hostile environment has no 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 could be required.

Conclusion

In view of the foregoing discussion, i + 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. ZO

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:

Contents

Checksheet Page No.

Equipment Item

Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER System Consideration Review Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

3a, X_{1} , X_{2} , X_{3} Y_{4} , Y_{6} , Y_{7}

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM NO. 20
SUMMARY OF LICENSEE DESCONSES TO THE	NRC SER - ONLY CRECKED ITEMS ARE APPLICABL
	THE DAY CHET CARCERD TIME HE HE DICHED
X The Licensee (has/has not) provid	led a response to the SER concerns.
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.	
The Licensee has presented inform outstanding qualification deficie	
X The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equipment been fully established.
X Justification for interim ope Licensee for this equipment i	eration (has/ has-not) been provided by the tem.
\underline{X} Corrective action specified b	by the Licensee:
Z Equipment replacement wit Equipment modification	
Equipment relocation abov Relocate or shield equipm	e submergence level
Verify qualification by a	dditional (testing/analysis)
Equipment relocation to a	mild environment
Qualification testing of Other (equipment in progress
	er information for this equipment item isis for justification for interim
X The Licensee (has/mas not) pr	ovided a schedule for the proposed
	for accomplishing the corrective
action September 1982	(next refueling outage) .)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualification vironmental qualification.
ESIGNATION OF RESULTANT NRC QUALIFIC	ATION EVALUATION CATEGORY BASED ON REVIEW
CIRCLED ITEM ONLY: (See Section 3	
.a Qualified	II.c Qualified Life Deficiency
.b Modification	III.a Exempt
II.a Qualification Not Established II.b Not Qualified	III.b Not in Scope IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

EQUIPMENT ENVIRONMENTAL QUALIFICATION & MARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establi Aging Degradation Evaluated Adequately	ished X
Qualified Life or Replacement Schedule Established (If Required	i) <u>X</u>
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	
 Duration Adequate 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)	
criteria negariting margins outprice (norme offer a)	

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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ZO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I_; NUREG-0588, Cat. II ___.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-1/0588-11)	LICENSEE	QUALIFICATION	DEFICIENCY (X OR NOTE NO.)
EQUIPMENT DESCRIPTION Equipment Type	Jenel Transmitter	Transitor	
Manufacturer's Name (5.2.2/-/-)	Gould	· Preserve tramite 5/12299	
Model Number (5.2.2/-/-)	PO-3018-	PDH 3000 - 300 -18-11	su note 3
Serial Number	400-38-11-	• PD 3018-200-38-66-650 (0-200" W.C. Roma)	:
Features/Mounting (5.2.6/-/-)		(differented presence) S/N 24389	
Connections/Interfaces (5.2.6/-/-)			
Location/Elevation	Ry 610G. TORUS (T-10)		Tome water land
Equipment ID No.	LT-1630A(B)		monitoring
QUALIFICATION REPORT (8.0/5.0/5.0) Report ID Number		58477 Bar A	E 8287
Report Date		5-5-80	Long
Issued by		Wyle Labe	-
Prepared for		Gould 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)		the OP unit was tested it one point	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.		2 ero inches of water no anomalies noted	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ZO

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0508-I/0588-II)	LICENSEE	QUALIFICATION	DEFICIENCY (X OR NOTE NO.)
	1		
Acceptance Criteria (5.2.5/2.2.1/2.2.1)			1
(3.2.2/2.3.1/2.2.1)	1		1
Accuracy (5.2.5/-/-)	;	1.76% F.S.	su note 2
Number of Specimens	1		
Test Instruments Calibrated	:		
Safety Function (Active/	-		1
Passive) (-/2.1.3/2.1.3)	actri		:
Test Duration (5.2.1/-/-)	;		
Accident Duration (Envir.	1		
Above Normal) (5.2.1/-/-)	:		:
Required Function Time	Continuous		
Test Sequence (General)	1	0-300 PS19 Ronge	
(5.2.3/2.3.1/2.3.1)	1	subjected to seismic,	
Test Sequence (NUREG-0588,		: inadiation, functional	1
Cat. I) (-/2.3.1/-)	1	testing	
1. Representative Sample	:	: 0-200 PS13 Range indicted to indiction	1
2. Baseline Data	1 C	: subjected to inatation	
3. Performance Extremes	1	and functional testing	
4. Thermal Aging			
 Radiation Aging Wear Aging 	1	1	
7. Vibration/Seismic	1.1.1.1.1.1	1	
8. DBE Exposure	1	1	1
9. Post-DBE Exposure	1	1	:
10. Inspection	:	1	
Aging	1		X
(5.2.4, 7.0/4.0/4.0)	:	: none	: ^
Thermal Aging/Basis	1	1	1
Material Aging	1	1	i
Evaluation $(7.0/-/-)$		1	:
Materials Susceptible	1	1	:
(Thermal) (5.2.4, 7.0/-/-)	1	:	1
Radiation Aging, Type	1	none	X

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-1/0588-11)	LICENSEE SUBMITTAL	QUALIFICATION	DEFICIENCY (X OR NOTE NO.)
ACCIDENT CONDITIONS			
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 × 106 Rode	Both spicimene subjected to 2.26 × 107 R.	rde meter 1
Plateout Dose Considered (-/1.48/1.48)			
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)			

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ZO

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-1/0588-11)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS			1
Rate of Temp./Press.			1
Increase	!!!		1
Peak: °F/psig/RH/Time	no change		
Decrease To: °F/psig/RH/Time	no chonze chickelest		: checkehul 3 C
Decrease To: °F/psig/RH/Time	30		1
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)	NA		
Spray Composition			
(4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)	NIA		
Spray Density (gpm/ft ²)	NA		
Spray Duration	NA		
Submergence Duration	NA		
(4.1.3/2.2.5/2.2.5)			
In-Leakage Considered	NA		
(5.2.6, 5.3.2/-/-)	NA		
Time to Submergence	NA		
Dust Environment	NA		

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

NOTES: (1) The 200 inch W.C. OP transmitter apparently 2.26×10 rode of inadiation sure tenled (but inde disphagne de outward printle ----fact indication 1 a ndicedle anna only No The anon home no (2. 2.26×107 rode cound L 1 full 76% no port 2 Cal number relationship to 3. test spicimen model mitte millione Unit ha at not establishe

A Division of The Franklin Institute 20th and Race Streets, Fhila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. ____4/5-9

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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 (1501-CIA, B, C, D) Licensee reference not cized Required Operating Time: Continuous TER Checksheet No. 71 Reference 19, Section 4.3.2.4 Licensee Submittal: Page V1C-3 [27]

DESIGNATION FOR DEFICIENCY INENTIFIED BY THE NRC SER	- 61	RCLE	D IT	MIS) ON	CX:
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, (RPR.) SXN	, SE	N, Q	I, RI	PS,	None	,
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Che	cksh	eet i	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	15					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	X	36.	X		
System Consideration Review	×.	×6.	36.	¥a,	¥c.	X£
Equipment Environmental Qualification Review		N'A	XX.	XX	×	×.
Installed TMI Lessons Learned Implementation Equipment Summary	9ú.	*				
Maintenance and Replacement Schedule Summary	yh.	75.	×			

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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM N	0. <i>7</i> /
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APPL	ICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is an exposed to the applicable DBE	
The Licensee has presented informa outstanding qualification deficien		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equippeen fully established.	ment
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by em.	the
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification		
Equipment relocation above	submergence level	
Relocate or shield equipme Verify qualification by ad	ent from radiation source	
Equipment relocation to a	mild environment	
Qualification testing of e		
		_)
	er information for this equipment iter ais for justification for interim	m
corrective action. (Schedule	for accomplishing the corrective	
X The Licensee states that the equip and/or should be exempted from env		tion
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of	Conference of and conference of the second of the	VIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification	III.a Exempt	1.1.1
II.a Qualification Not Established II.b Not Qualified	III.b Not in Scope IV Documentation Not Available	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established Aging Degradation Evaluaced 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

April

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DESIGNATION: X = CATEGORY

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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.D	Equipment Not in the Scope of the Qualification Review	X
IV	Documentation Not Made Available	

MILD ENVIRONMENT

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. 7/

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. 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. <u>459</u>

Page

EQUIPMENT ENVIRON JENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

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]

(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: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER lb Equipment Environmental Qualification Summary Forms 2 3a, X, X, X Licensee Response to NRC SER 34. 5×, ×, ×, ×, ×, × System Consideration Review **, **, **, **, **, **, **, **, **, **, Equipment Environmental Qualification Review 6a, Installed TMI Lessons Learned Implementation 9b Equipment Summary 76, 76, 72 Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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. <u>459</u>	Page 1b
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 72
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED IT MS ARE APPI	LICABLE:
The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficie		
X The Licensee (has/has not) propositem whose qualification has not		oment
Justification for interim ope Licensee for this equipment i	ration (has/h as not) been provided by tem,	/ the
\underline{X} Corrective action specified b	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipm Verify qualification by a Equipment relocation to a X Qualification testing of Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment	
	er information for this equipment ite sis for justification for interim	m
	ovided a schedule for the proposed for accomplishing the corrective	
The Licensee states that the equi and/or should be exempted from en	pmen. item does not require qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
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	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>4.59</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ZA

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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

1.7

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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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. 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

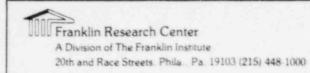
NRC requested an evaluation of the environmental qualification of safetyrelated electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 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 safetyrelated 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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

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]

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:

Contents

Checksheet Page No.

Maintenance and Replacement Schedule Summary

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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. 4/5 9	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. Z3
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APPI	LICABLE:
The Licensee (bas/bas not) provide	ed a response to the SER concerns.	
	그는 그는 것 같아요. 그는 것을 하는 것을 수가 있다. 물건을 하는 것을 수가 있는 것을 수가 있다. 것을 것을 수가 있는 것을 것을 수가 있는 것을 것을 수가 있는 것을 것을 수가 있는 것을 것을 수가 않았다. 것을 것을 것을 것을 것을 것을 것을 수가 있는 것을	
qualified and/or will function whe environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented information outstanding qualification deficier		
The Licensee (has/has not) propose item whose qualification has not b		ment
X Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided by tem.	the
X Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above		
Relocate or shield equipme	ent from radiation source iditional (testing/analysis)	
Equipment relocation to a	mild environment	
X Qualification testing of e Other (equipment in progress)
	er information for this equipment ite sis for justification for interim	m
	ovided a schedule for the proposed	
corrective action. (Schedule action <u>March - Op</u>	for accomplishing the corrective 1.982 .)	
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualification.	ition
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		VIEW
I.a Qualified	II.c Qualified Life Deficiency	
II.a Qualification Not Established	III.a Exempt III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Available	

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20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

A second s	X
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)	
errerra wegararig margine sarrerra (mine stor) sarrer	

NRC QUALIFICATION CATEGORY

DESIGNATION: X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	X
II.a	Equipment Qualification Not Established	
II.D	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	

Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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. Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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

Not stated, Not applicable

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LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 , 36, 36
System Consideration Review	* the the the the the
Equipment Environmental Qualification Review	3a, X, X, X, X X M K, K, K, K, K X, X, X, X, X, X, X, X, X, X, X,
Installed TMI Lessons Learned Implementation Equipment Summary	× ×
Maintenance and uplacement Schedule Summary	the, 7/5+ the

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 74
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
X The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.	en exposed to the applicable DBE	
The Licensee has presented inform outstanding qualification deficie		
X The Licensee (has/has not) propos item whose qualification has not		pment
X Justification for interim ope Licensee for this equipment i	ration (has/ has not) been provided b tem.	y the
\underline{X} Corrective action specified b	by the Licensee:	
<pre>X Equipment replacement wit Equipment modification Equipment relocation abov Relocate or shield equipm Verify qualification by a Equipment relocation to a Qualification testing of Other (</pre>	re submergence level ment from radiation source additional (testing/analysis) mild environment)
	er information for this equipment it isis for justification for interim	em
	ovided a schedule for the proposed for accomplishing the corrective	.)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualific vironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
I.a Qualified (.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	

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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ	ished
Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require Program Established to Identify Aging Degradation	d)
Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate o Peak Pressure Adequate o Duration Adequate	
 Required Profile Enveloped Adequately 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

0

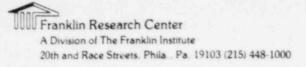
C.9.

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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	
VI	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. 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. 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. 25

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, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN	, SEN, QI, RPS, None,
Not stated, Not applicable replacement	
LISTING OF APPLICABLE CHECKSHEETS:	
Contents	necksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	40, 40, 40, 40, 40, 4E
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, 70

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFI	CATION REVIEW OF EQUIPMENT ITEM	NO. 75
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/ has not) provid	ded a response to the SER concerns.	
	fically stated that the equipment is hen exposed to the applicable DBE	
X The Licensee has presented informoutstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	sed a corrective action for this equ been fully established.	ipment
Justification for interim ope Licensee for this equipment i	eration (has/has not) been provided item.	by the
Corrective action specified b	by the Licensee:	
Equipment replacement with Equipment modification	and the second se	
Equipment relocation above	ve submergence level	
Relocate or shield equipm	additional (testing/analysis)	
Equipment relocation to a	a mild environment	
Qualification testing of		
Other ()
	ner information for this equipment i asis for justification for interim	tem
The Licensee (has/has not) of	rovided a schedule for the proposed	
the second se	e for accomplishing the corrective	
action		.)
The Licensee states that the equi and/or should be exempted from er	ipment item does not require qualifinvironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	Stand other starts of the start	REVIEW
I.a Qualified I.b Modification	II.c Qualified Life Deficiency III.a Exempt	
I.a Qualification Not Established		
II.b Not Qualified	IV Documentation Not Availabl	е

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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 SUMMARY H	ORM
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Estab	olished X
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	(d)
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 dequately	
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	a separate
Test Duration Margin (1 hour + Function Time) Satisfied	
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY

0.1.04	adarbucue Angreree	CONTRACTOR OF THE OWNER.
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. 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. 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. <u>459</u>

P	ao	0
-	~ 8	-
	5	
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EQUIPMENT //IRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

Checksheets 5 a Thru 57 have been removed due to the

proprietary nature of information contained therein.

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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) (B T, QT, RT, P, H, CS, A) S, ((R), M, I, (M) RPN, EXN, SEN, QI, RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Checksheet Page No. Contents la Equipment Item Summary of Licensee Responses to the NRC SER 1b 2 Equipment Environmental Qualification Summary Forms 3a, 30, 30, 30 Licensee Response to NRC SER System Consideration Review Ja. 36, 36, 36, 36, 36, 36, Equipment Environmental Qualification Review 54, 54, 5K, 54 36, 56 Installed TMI Lessons Learned Implementation Equipment Summary 76, 7%, 7% Maintenance and Replacement Schedule Summary

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 Ib			
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76					
SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:			
X The Licensee (has/has not) provide	d a response to the SER concerns.				
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.					
The Licensee has presented informa outstanding qualification deficien					
The Licensee (has/has not) propose item whose qualification has not b		ipment			
Justification for interim oper Licensee for this equipment it	ation (has/ has not), been provided .em.	by the			
Corrective action specified by	the Licensee:				
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (submergence level ent from radiation source dditional (testing/analysis) mild environment)			
	er information for this equipment i sis for justification for interim	tem			
	ovided a schedule for the proposed for accomplishing the corrective mater 1982	.)			
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualifivironmental qualification.	cation			
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		REVIEW			
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 Availabl	.e			

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

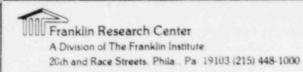
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Required) Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation 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	-

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. 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.

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. 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. <u>459</u>

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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]

(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: Checksheet Page No. Contents Equipment Item la Summary of Licensee Response to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, Xa, Xe, Xé Licensee Response to NRC SER Xe Ye, Xe, Xe, Xe, X System Consideration Review Equipment Environmental Qualification Review 5a, 5b, 5c, 5d, 5e, 5f, 59, 5h, X, X 6a, 00 Installed TMI Lessons Learned Implementation Equipment Summary 76, 76, 76 Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICI DENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

A Division of The Franklin Institute 20th and Race Streets. Ohila . 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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM N	0. 77
SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPL	ICABLE :
X The Licensee (has/has not) provide	d a response to the SER concerns.	
The Licensee (has/has not) specific qualified and/or will function whe environmental service conditions.	cally stated that the equipment is n exposed to the applicable DBE	
X The Licensee has presented information outstanding qualification deficient		
The Licensee (has/has not) proposed item whose qualification has not be	d a corrective action for this equip een fully established.	nent
Justification for interim operation Licensee for this equipment it	ation (has/has not) been provided by em.	the
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a r Qualification testing of equipment Awaiting qualification doct	submergence level nt from radiation source ditional (testing/analysis) mild environment quipment in progress	
The Licensee has provided other that can be construed as a bas operation.	r information for this equipment iter is for justification for interim	n
corrective action. (Schedule :	vided a schedule for the proposed for accomplishing the corrective .)	
The Licensee states that the equipment and/or should be exempted from envi	ment item does not require qualification.	tion
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of		/IEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification	III.a Exempt	1.1
II.b Not Qualified	IV Documentation Not Available	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

DESIGNATION: X = CATEGORY

Documented Evidence of Qualification Adequate	X
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)	X
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

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 Evaluation Deferred ______ IV Documentation Not Made Available ______ 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. <u>459</u>

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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 <u>fully</u> qualified as so indicated on SCEW Sheet X-1.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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	DEFICIENCY (X OR NOTE NO.)
EQUIPMENT DESCRIPTION Equipment Type	RADIATION	HIGH RANGE RADIATION MONITOR	
Manufacturer's Name (5.2.2/-/-)	GENERAL	GENERAL ATOMIC	
Model Number (5.2.2/-/-)	RD-23	RD-23	
Serial Number		Y- 501; Y - 1894-A	1
<pre>Features/Mounting (5.2.6/-/-)</pre>	ND	REUTER STOKES RS - C3 - 1006 - 201 DEFECTOR ASSEMBLY	:
Connections/Interfaces (5.2.6/-/-)	ND	ROCKBESTOS COAX	: X-
Location/Elevation	DRYWELL	RAYCHEM WCSF(splice sleeves)	ser Page
Equipment ID No.			ser Poge Statsg and Sh
QUALIFICATION REPORT (8.0/5.0/5.0) Report ID Number	1	E-254-960	note /
Report Date	1	DECEMBER 15, 1980	1
Issued by		GENERAL ATOMIC	
Prepared for		GENERAL ATOMIC	
Referenced Reports			
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)			-
QUALIFICATION TEST PROGRAM 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.			:

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-1/0588-11)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
	1		1
Acceptance Criteria			
(5.2.5/2.2.1/2.2.1)			
Accuracy (5.2.5/-/-)	1		
Number of Specimens		2	
Test Instruments Calibrated	:		
Safety Function (Active/	Post		1 1 1 1
Passive) (-/2.1.3/2.1.3)	ACCIDENT	:	1
	MONITORING	1	
Test Duration (5.2.1/-/-)			
Accident Duration (Envir.	LEANES		c .
Above Normal) (5.2.1/-/-)	154 HRS		
Required Function Time	CONTINUOUS		
Test Sequence (General)	1	LOCA/SETS/	i
(5.2.3/2.3.1/2.3.1)	:	LUCAISELSI	1
	:		1
Test Sequence (NUREG-0588,			
Cat. I) (-/2.3.1/-)			
1. Representative Sample	1		
2. Baseline Data	1	:	1
3. Performance Extremes	:	:	1
4. Thermal Aging	1	1	:
5. Radiation Aging	1		-
6. Wear Aging	:		
 7. Vibration/Seismic 8. DBE Exposure 			:
9. Post-DBE Exposure	1		
10. Inspection	1	1	:
	1		-
Aging	40 YR 135 F	NONE	i V
(5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis		1	
Include nytiny/basis	1	1	: su pape
Material Aging	:	GENERAL ATOMIC	: stors
Evaluation $(7.0/-/-)$	1	E-115-699	5h te 3
Materials Susceptible	i	1	:
(Thermal) (5.2.4, 7.0/-/-)	1		1
Radiation Aging, Type	GAMMA	1	i.

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE	QUALIFICATION	DEFICIENCY (X OR NOTE NO.)
(DOM 0300-1/0300-11)	!		1
Radiation Aging, Dose (rd)	3.8 × 106 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/-)		3days, 3cycle 60°C, 80-90%ork	
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	135 F		
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	
<pre>Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%,</pre>		1 1 1 1 1 1 1 1 1 1 1 1 1 1	
 Radiation (not required) 		:	1
<pre>4. Time (+10%, +1 hour + function time minimum)</pre>		1	:

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-1/0588-11)	LICENSEE SUBMITTAL	QUALIFICATION	DEFICIENCY (X OR NOTE NO.)
ACCIDENT CONDITIONS			
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	1
Radiation Dose (rd) (4.1.2/1.4/1.4)	9.1 × 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 Radiatio: (4.1.2/-/-)	-		
Radiation Dose (. ormal + Accident) (4.1.2/~/-)	9.4 × 10 Rad	NONE	X - goon
Plateout Dose Considered (-/1.48/1.48)	-		5/591
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	-		note2

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION	DEFICIENCY (X OR NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS			
Rate of Temp./Press. Increase	ND.	7 °F, 1.5 psi/per.	1
Peak: °F/psig/RH/Time	310/44/100/-	400/57/100/100/ 10 min	i,
Decrease To: °F/psig/RH/Time	276/24/100/144	400 to 175/57 to 0/00/ 100 102.4	Leaves
Decrease To: °F/psig/RH/Time	160/12/100/1004	390/57/100/10min	1
Decrease To: °F/psig/RH/Time		330/ 57/100/ 10 to 30 min	· · · · .
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C,		305/ 57/ 100/30m to 1ha 260/ 40/100/1h to aha	
2.2.6/1.2.5.C, 2.2.6)		205/46/100/4 Days	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		Test	· · · ·
Spray Composition	Demin	0.28 M 4303	
(4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)	Weten	0.064 M Na25203	
Spray Density (gpm/ft ²)	NO	0.15 gpm/ ++ 2	
Spray Duration	NO	continuous after	
Submergence Duration (4.1.3/2.2.5/2.2.5)	NA	Iomin. 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	

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General discu NOTES: to system Z les 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 gualified 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 pres

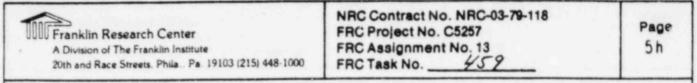
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NOTES: Although the coaxial cable was not part of the specimen per se, that is, it was not being gualified, the connector/cable interface was. Therefore, the cable difficulties shall be described also. Cable difficulties encountered were outer jacket 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 WCSF 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 13-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. ${\ensuremath{\mathcal M}}$



NOTES : R the e 1 02 3 nech

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safetyrelated 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 safetyrelated 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 HI Range Rediction Monitor

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 28

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]

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

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LISTING OF APPLICABLE CHECKSHEETS:

Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER 1b Equipment Environmental Qualification Summary Forms 2 3a, 35, 36, 38 Licensee Response to NRC SER 1× 55, 40, 10, 10, 16 System Consideration Review X. X. X. X. M. W. X. Equipment Environmental Qualification Review 34. 3. 3. 55 64. 36. Installed TMI Lessons Learned Implementation Equipment Summary 76, 76, 76 Maintenance and Replacement Schedule Summary

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	A Division of The Franklin Institute	
	20th and Race Streets. Phila . Pa. 19103 (215) 448-1000	

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.b Not Qualified II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

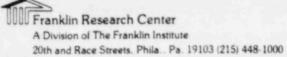
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Required) Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation 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.D	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. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

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5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j

6a, 6b

7ar 70, 70

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM N	10. 79
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPI	LICABLE:
X The Licensee (has/has not) provid	ded a response to the SER concerns.	
	fically stated that the equipment is nen exposed to the applicable DBE	
X The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	sed a corrective action for this equip been fully established.	ment
Justification for interim ope Licensee for this equipment i	eration (has/has not) been provided by item.	the
Corrective action specified b	by the Licensee:	
Equipment replacement wit	th qualified equipment	
Equipment modification Equipment relocation above	ve submergence level	
Relocate or shield equipm	ment from radiation source	
Verify qualification by a Equipment relocation to a	additional (testing/analysis)	
Qualification testing of		
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	ner information for this equipment ite asis for justification for interim	m
	rovided a schedule for the proposed e for accomplishing the corrective	
action		
The Licensee states that the equi and/or should be exempted from er	ipment item does not require qualificant invironmental qualification.	tion
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON RE of this TER for Legend)	EVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification	III.a Exempt	
II.a Qualification Not Established II.b Not Qualified	III.b Not in Scope IV Documentation Not Available	
II.D NOT QUALIFIED	Ty Documentation Not Available	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Estab	lished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requir	eu)
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	and the state of the
o Duration Adequate	
o Required Profile Enveloped Adequately	
o Steam Exposure (If Required) Adequate	where the second second second
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)	

DESIGNATION: X = CATEGORY

NRC QUALIFICATION CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.D	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 presided by the NSSS supplier.

Franklin Research Center A Division of The Franklin Institute 20th and Race Streets, Phila, Ps. 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. 79

LICENSEE RESPONSE TO NRC SER

Extensive testing of the devices by the manufacturer meets the requirements of the guidelines.

Surveillance and Preventive Maintenance

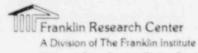
Refer to the description of the Surveillance and Preventive Maintenance program provided in Section B.6 of this report.

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.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 30

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]

DESIG	GNATION	FOR	R DE	EFICIE	ENCY	IDEN	NTIFIED	BY	THE	NRC	SER	-	CIRCLED	ITEM (S)	ONLY:
(See	Section	13	of	this	TER	for	Legend)								

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Equipment Item

Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER System Consideration Review Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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5e, 5f,

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QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITE	M NO. 80
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE A	<u>IPPLICABLE</u>
X The Licensee (has/has not) provid	led a response to the SER concerns.	19.34
	ically stated that the equipment i en exposed to the applicable DIE	.S
X The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equipeen fully established.	luipment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided tem.	i by the
Corrective action specified b	by the Licensee:	
Equipment replacement wit	h qualified equipment	
Equipment relocation abov	e submergence level	
Relocate or shield equipm	ent from radiation source	
Verify qualification by a		
Equipment relocation to a Qualification testing of		
Other (edarbment in brodress)
	er information for this equipment asis for justification for interim	item
The Licensee (has/has not) pr	ovided a schedule for the proposed	1
	for accomplishing the corrective	
action)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualif avironmental qualification.	ication
DESIGNATION OF RESULTANT NRC QUALIFIC	CATION EVALUATION CATEGORY BASED ON	REVIEW
- CIRCLED ITEM ONLY: (See Section 3	And the structure of the structure in the structure of the	
I.a Qualified	II.c Qualified Life Deficiency	,
I.b Modification	III.a Exempt	
II.a Qualification Not Established	III.b Not in Scope	1.
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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. 20

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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.

See notes on page 5f

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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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

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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. <u>459</u>

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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	
LISTING OF APPLICABLE CHECKSHEETS:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 35, 9c, 9d
System Consideration Review	4a, 30, 4c, 3d, 3c, M
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5K, 5k, 55
Installed TMI Lessons Learned Implementation Equipment Summary	6ac)80
Maintenance and Replacement Schedule Summary	Bar, 205, 20

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE API	PLICABLE:
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.	
X The Licensee has presented information which shows there are no outstanding qualification deficiencies.	
The Licensee (has/has not) proposed a corrective action for this equi item whose qualification has not been fully established.	pment
Justification for interim operation (has/has not) been provided h Licensee for this equipment item.	y the
Corrective action specified by the Licensee:	
Equipment replacement with gualified 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 (
Other (/
The Licensee has provided other information for this equipment it that can be construed as a basis for justification for interim operation.	em
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 qualific and/or should be exempted from environmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON F - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	EVIEW
I.a 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. FI

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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 Acc.racy 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	

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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. 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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8/

Checksheets 5a Ara 5f have been removed due to the

proprietary nature of information contained therein.

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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, 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:

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Checksheet Page No.

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Equipment Item

Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM I	NO. 8
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABL
X The Licensee (has/ has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
X The Licensee has presented inform outstanding qualification deficies		
The Licensee (has/has not) propositient whose qualification has not item whose qualification has not has not item whose qualification has not have qualification has not have qualification has not have qualification	ed a corrective action for this equip been fully established.	pment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided by tem.	y the
Corrective action specified b	y the Licensee:	
Equipment replacement with Equipment modification	h qualified equipment	
Equipment relocation above	e submergence level	
Relocate or shield equipme		
Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of Other (equipment in progress)
	er information for this equipment ite sis for justification for interim	em
	ovided a schedule for the proposed for accomplishing the corrective)
The Licensee states that the equip and/or should be exempted from en	pment item does not require qualifica vironmental qualification.	ation
ESIGNATION OF RESULTANT NRC QUALIFIC CIRCLED ITEM ONLY: (See Section 3 of		EVIEW

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

Franklin Research Center A Division of The Franklin Institute

NRC QUALIFICATION CATEGORY

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. 82

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Establ	.1shed
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
o Feak Temperature Adequate	
o Peak Pressure Adequate	
 Duration Adequate 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)	

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.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.

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. 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

0.

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. 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	3
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

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, 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: Contents Checksheet Page No. Equipment Item la 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, 31, 5g, 5h, 51, 5j-Installed TMI Lessons Learned Implementation 6a, 60,

Equipment Summary

Maintenance and Replacement Schedule Summary

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]	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
RC Project No. C5257
RC Assignment No. 13
FRC Assignment No. 13 FRC Task No459

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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 gualification deficiencies. X The Licensee (has has not) proposed a corrective action for this equipment item whose gualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: X 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. X 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 I.b Modification III.a Exempt II.a Qualification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available

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. 23

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	A - DEFICIENCI
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_ <u>X</u> _
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

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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.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.

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. 4-59

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8.3

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.

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. 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. <u>459</u>

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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:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	42, 4b, 40, 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

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 84
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AF	PLICABLE:
X The Licensee (has/ has not) provide	ed a response to the SER concerns.	
X The Licensee (has/has not) specif. qualified and/or will function who environmental service conditions.		-
The Licensee has presented information outstanding qualification deficies		
X The Licensee (has/ has not) propose item whose qualification has not h		ipment
\underline{X} Justification for interim open Licensee for this equipment is	ration (has/ has_not) been provided tem.	by the
\underline{X} Corrective action specified by	y the Licensee:	
<u> </u>	h qualified equipment	
Equipment relocation above	e submergence level	
Relocate or shield equipme		
Verify qualification by ac	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of e	equipment in progress)
	er information for this equipment i sis for justification for interim	tem
	for accomplishing the corrective 1982 (refueling outoge)	.)
The Licensee states that the equip and/or should be exempted from en	pment item does not require qualifi vironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		REVIEW
I.a Qualified (I.b) Modification	II.c Qualified Life Deficiency III.a Exempt	
II.a Qualification Not Established	III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Availabl	e

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. 4/59

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	FORM
IRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Ocumented Evidence of Qualification Adequate	X
dequate Similarity Between Equipment and Test Specimen Esta	
ging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requi	red)
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)	

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 envermental conditions

are not servere (118°F, 0.3 psig for 3 2 min mar) and the device is semple. It may be provide to qualify by a relatively simple analysis and this arried replacement.

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

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. 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. <u>459</u>

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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:	
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 30, 34
System Consideration Review	42, 4b, 40, 4d, 4e, 4E-
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5c, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b-
Maintenance and Replacement Schedule Summary	-7a, 7b, 7c-

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. <u>85</u>
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE:
X The Licensee (has/has not) provid	ied a response to the SER concerns.	
X The Licensee (has/had not) specifing qualified and/or will function when vironmental service conditions.	en exposed to the applicable DBE	-
— The Licensee has presented inform outstanding qualification deficie		
X The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equi been fully established.	pment
Justification for interim ope Licensee for this equipment i	eration (has/ has not) been provided b .tem.	y the
\mathbf{X} Corrective action specified b	by the Licensee:	
Equipment replacement wit		
Equipment relocation abov		
Relocate or shield equipm Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to a	mild environment	
Qualification testing of Other (equipment in progress	
	er information for this equipment it sis for justification for interim	em
	ovided a schedule for the proposed for accomplishing the corrective M_{1982} .	1
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualific vironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		EVIEW
I.a Qualified	II.c Qualified Life Deficiency III.a Exempt	
II.a Qualification Not Established II.b Not Qualified	III.b Not in Scope IV Documentation Not Available	

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. ST DESIGNATION: DESIGNATION: NRC REQUIREMENTS DESIGNATION: NRC REQUIREMENTS X = DEFICIENCY Documented Evidence of Qualification Adequate X Adequate Similarity Between Equipment and Test Specimen Established X Aging Degradation Evaluated Adequately (16 Demined)

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	
 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	100
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

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X

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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.

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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. 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. 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, 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:

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Checksheet Page No.

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Equipment item	Ia
Summary of Licensee Responses to the NRC SER	16
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a
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Equipment Environmental Qualification Review	5.

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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20th and Race Streets. Phila . Pa. 19103 (215) 448-1000	FRC Task No. 737
DUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM NO.
UMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABL
X The Licensee (has has not) provide	d a response to the SER concerns.
The Licensee (has/bas not) specific qualified and/or will function whe	
environmental service conditions.	in exposed to the approable bos
The Licensee has presented informa	
outstanding qualification deficien	cies.
	d a corrective action for this equipment
item whose qualification has not b	een fully established.
X Justification for interim oper	ation (has/has met) been provided by the
Licensee for this equipment it	
X	
$\underline{\times}$ Corrective action specified by	the Licensee:
K Equipment replacement with	qualified equipment
Equipment modification	
Equipment relocation above Relocate or shield equipme	submergence level
Verify qualification by ad	ditional (testing/analysis)
Equipment relocation to a	mild environment
Qualification testing of e	quipment in progress
Other ()
The Licensee has provided othe	er information for this equipment item
	sis for justification for interim
operation.	
X The Licensee (has/has not) pro	ovided a schedule for the proposed
2	for accomplishing the corrective
action _ Sigsten her	.)
The Licensee states that the equip	pment item does not require qualification
and/or should be exempted from en	
	TTON THISTON CAMPGODY DAGED ON DEVICEN
- CIRCLED ITEM ONLY: (See Section 3)	ATION EVALUATION CATEGORY BASED ON REVIEW
L.a Qualified	II.c Qualified Life Deficiency
I.b Modification	III.a Exempt
II.a Qualification Not Established II.b Not Qualified	III.b Not in Scope IV Documentation Not Available
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NRC QUALIFICATION CATEGORY

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. ______59

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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)

DESIGNATION: X = CATEGORY

I.a Equipment Qualified I.b Equipment Qualification Pending Modification X II.a Equipment Qualification Not Established II.5 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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

LICENSEF 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

Sec.

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. 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

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: Checksheet Page No. Contents Equipment Item la 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, 40, 4d, 4e, 4E 52, 5b, 50, 5d, 3e, 5E, Equipment Environmental Qualification Review 5g. 5h. 51, 51

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

7a, 7b, 7c

6a, 6b ___

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 87
SUMMARY OF LICENSEE RESPONSES TO THE I	NRC SER - ONLY CHECKED ITEMS ARE APPI	LICABLE
X The Licensee (has/ has not) provide		
The Licensee (has/ has not) specif: qualified and/or will function whe environmental service conditions.		
The Licensee has presented information outstanding qualification deficier		
The Licensee (has/has not) propose item whose qualification has not b		oment
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided by tem.	the
\underline{X} Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ac Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment	,
	er information for this equipment ite sis for justification for interim	m
	ovided a schedule for the proposed for accomplishing the corrective 1982 .)	
	pment item does not require qualifica vironmental qualification.	tion
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of		VIEW
I.a Qualified <u>H.B Modification</u> 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	

NRC Contract No. NRC-03-79-118

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Franklin Research Center FRC Project No. C5257 A Division of The Franklin Institute FRC Assignment No. 13 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000 FRC Task No. 459 EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87 EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Savisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b

100

II.a Equipment Qualification Not Established II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified III.a Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review III.D 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

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.

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. A Division of The Franklin Institute

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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. 28

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, 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: Checksheet Page No. Contents Equipment Item la 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, 40, 4d, 4e, 4f Equipment Environmental Qualification Review 5a, 5b, 50, 5d, 5e, 5t, 59, 5h, 51, 5j-Installed TMI Lessons Learned Implementation 62,60 Equipment Summary Maintenance and Replacement Schedule Summary 70, 70, 7c

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. <u>459</u>	Page I b
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 88
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specified and/or will function wheenvironmental service conditions.	en exposed to the applicable DBE	
The Licensee has presented inform outstanding qualification deficie		
X The Licensee (has/has not) propos item whose qualification has not		ipment
\underline{X} Justification for interim ope Licensee for this equipment i	ration (has, has not) been provided tem.	by the
X Corrective action specified b	y the Licensee:	
<pre></pre>	e submergence level ent from radiation source dditional (testing/analysis) mild environment)
	er information for this equipment i sis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective 1.982	.)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualific vironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
I.a Qualified <u>(I.b Modification</u>) 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	e

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. 88

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate	×
Adequate Similarity Between Equipment and Tes: Specimen Establ:	ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required	d)
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	10 PT
(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)	
	DEGTONATION
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY

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Equipment Qualified I.a Equipment Qualification Pending Modification I.b 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 Equipment Not in the Scope of the Qualification Review III.D 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.

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-03-79-11
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

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, 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:

Contents	Checksheet Page Nc.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	42, 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 -

-7a, 7b, 70-

Maintenance and Replacement Schedule Summary

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	A Division of The Frank	din Institute	e	
	20th and Race Streets. I	Phila Pa	19103 (215)	448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/has not) provided a response to the SER concerns.
X The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE onvironmental service conditions.
Chrystonmental Scland conditioner.
X 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 III.b Not in Scope
II.b Not Qualified IV Documentation Not Available

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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. 89

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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

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DESIGNATION: X = CATEGORY

I.a	Equipment Qualified	X
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.b	Equipment Not gualified	
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.

Previously Identified Deficiencies were resourced by licensee response P-3a.

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. 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.

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 as stated in Q-12.

NRC Contract No. NRC-0	3-79-118
FRC Project No. C5257	
FRC Assignment No. 13	
FRC Task No. 459	_

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 20

Equipment Item No. 90 (TMI Action Plan Item II.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]

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 st	ated,	Not applic	ned	
LISTIN	IG OF	APPLICABLE	CHECKSHEETS	:

Contents

Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary 70, 70, 70-

2 3a, 3b, 3c, 3d 4a, 4b, 4c, 4d, 4e, -5a, 5b, 5c, 3d, 5e, 51;

Checksheet Page No.

59, 5h, 51, 5j-

6a, 60-

la 1b

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SUMMARY OF LIC	ENSEE RESPONSES TO TH	E NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
The Licens	ee (has/has not) prov	ided a response to the SER concerns.
qualified		ifically stated that the equipment is when exposed to the applicable DBE is.
	ee has presented info g qualification defic	ermation which shows there are no eiencies.
		posed a corrective action for this equipment of been fully established.
	ication for interim o see for this equipment	operation (has/has not) been provided by the : item.
X Correc	tive action specified	by the Licensee:
Eq Eq Re Ve Eq Qu	uipment modification uipment relocation ab clocate or shield equi rify qualification by uipment relocation to	with qualified equipment pove submergence level pment from radiation source y additional (testing/analysis) o a mild environment of equipment in progress
The Li that c operat	an be construed as a	other information for this equipment item basis for justification for interim
correc	tive action. (Schedu	provided a schedule for the proposed the for accomplishing the corrective April 1982.
The Licens and/or sho	ee states that the equal dbe exempted from	quipment item does not require qualification environmental qualification.
		FICATION EVALUATION CATEGORY BASED ON REVIEW 3 of this TER for Legend)
I.a Qualified I.b Modificat II.a Qualifica II.b Not Quali	tion Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

A Division of The Franklin Institute 20th and Kace 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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DESIGNATION: X = CATEGORY *

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establi 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 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

I.a	Equipment Qualified
I.b	Equipment Qualification Pending Modification
II.a	Equipment Qualification Not Established
II.b	Equipment Not Qualified
II.c	Equipment Satisfier 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

Equipment being Tested.

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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.

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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

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safetyrelated 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 safetyrelated 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

Page

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:

Contents

0

Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

2

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3a, 3b, 3c, 3d

4a, 4b, 4c, 4d, 4e, 4f

-5a, 5b, 5c, 5d, 5e, 5f, -5g, 5h, 5i, 5j

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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 Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. 91
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.		
The Licensee has presented information outstanding qualification deficies		
X The Licensee (has/has not) propose item whose qualification has not h	ed a corrective action for this equ been fully established.	ipment
Justification for interim oper Licensee for this equipment is	ration (has/has not) been provided tem.	by the
X Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification	h qualified equipment	
Equipment relocation above		
Relocate or shield equipme Verify qualification by ac	ent from radiation source dditional (testing/analysis)	
Equipment relocation to a	mild environment	
Qualification testing of (equipment in progress)
The Licensee has provided other that can be construed as a bas operation.	er information for this equipment is sis for justification for interim	tem
corrective action. (Schedule	ovided a schedule for the proposed for accomplishing the corrective o cable is available	•)
The Licensee states that the equipand/or should be exempted from en	pment item does not require qualificities vironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
I.a Qualified I.b Modification II.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Availabl	e

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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

0

DESIGNATION: X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	<u> </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	

See page 3a

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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.
- 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 anomalyin temperature qualification which may affect this equipment. An investigation is present: 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. Franklin Research Center

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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 safetyrelated 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 safetyrelated 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.

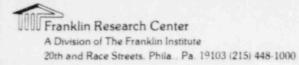
This plant is a PWR___, BWR X. The NSSS Vendor is Westinghouse (W)___, Babcox & Wilcox (B&W)___, Combustion Engineering (CE)___, General Electric (GE) X.

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 Rediation Monitor

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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	DEFICIE	NCY	IDE	NTIFIED	BY	THE	NRC	SER	-	CIRCLED	ITEM(S)	ONLY:
(See Sectio	n 3 (of this	TER	for	Legend)	1							

(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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	42, 4b, 4c, 4d, 4c, 4E-
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5£, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	62, 6b-

Maintenance and Replacement Schedule Summary

-7a, -7b, 7e-

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

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UMIN	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
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5	The Licensee (has/h as 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.
4	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.
	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.
123	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW
	RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
	Qualified II.c Qualified Life Deficiency
	Modification III.a Exempt Qualification Not Established III.b Not in Scope
I.a	Not Qualified IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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)

DESIGNATION: X = CATEGORY

NRC QUALIFICATION CATEGORY

I.a	Equipment Qualified	<u>×</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.

Review of Reference 29 confirms licence Atatiment.

Prevenerery identified déficiencies mu

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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.

•S

- 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

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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. 23

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:

Contents	Checksheet Page No.
Equipment Item	la
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, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 5i, 5j

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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6a, 6b-

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X 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.
X 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
Equipment relocation to a mild environment
Qualification testing of equipment in progress
Other ()
Contra (
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 QualifiedII.c Qualified Life DeficiencyI.b ModificationIII.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. 93

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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/Fressure 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)

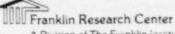
NRC QUALIFICATION CATEGORY

DESIGNATION: X = CATEGORY

I.a	Equipment Qualified	\rightarrow
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.

the Licensee has realized premining identified deficiencie - see p-3a Review of Reference 29 confirms License Statements.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

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]

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: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER lb Equipment Environmental Qualification Summary Forms 2 Licensee Response to NRC SER 3a, 36, 3c, 3d be to, be, to, to, to, A. System Consideration Review 5a, 5b, 5c, 5d, 5e, 5f, Equipment Environmental Qualification Review 59, 54, 54, 55 Installed TMI Lessons Learned Implementation Sec. 50 Equipment Summary Maintenance and Replacement Schedule Summary 78, 18, 25

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. <u>94</u>
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
X The Licensee (has/has not) specific qualified and/or will function who environmental service conditions.		3
X The Licensee has presented inform outstanding qualification deficies		
The Licensee (has/has not) propositiem whose qualification has not	ed a corrective action for this equipeen fully established.	uipment
Justification for interim ope Licensee for this equipment 1	ration (has/has not) been provided tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification Equipment relocation abov Relocate or shield equipm Verify qualification by a Equipment relocation to a Qualification testing of Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment)
	er information for this equipment sis for justification for interim	item
	ovided a schedule for the proposed for accomplishing the corrective	.)
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualif	fication
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		NREVIEW
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 Availab	

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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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)	
Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Required) Program Established to Identify Aging Degradation	
Qualified Life or Replacement Schedule Established (If Required) Program Established to Identify Aging Degradation	
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	and a second second second
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	

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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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

Checksheets 5a Thru 5F have been removed due to the

proprietary nature of information contained therein.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

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, 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:

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Equipment Item

Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER System Consideration Review Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Chec	ckshe	et I	Page	No.		
la						
lb						
2						
3a,	-307-	3e,	-3d-			
42.	· b,	40,	4d,	4e,	4f	
1 - 1 - 1 - P	5b, 5h,				5£,	-
67.	60					

72, 7br 7c

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. <u>459</u>	Page 1b
QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEN	NO. 9
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AN	PPLICABLE
X The Licensee (has/h as not) provid	led a response to the SER concerns.	
	fically stated that the equipment is nen exposed to the applicable DBE	5
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equipeen fully established.	lipment
Justification for interim operation Licensee for this equipment is	eration (has/has not) been provided tem.	by the
Corrective action specified b	by the Licensee:	
Equipment replacement wit	th qualified equipment	
Equipment modification Equipment relocation above	ve submergence level	
Relocate or shield equipm	ment from radiation source	
Verify qualification by a Equipment relocation to a	additional (testing/analysis)	
Qualification testing of		
Other ()
	ner information for this equipment asis for justification for interim	item
	rovided a schedule for the proposed a for accomplishing the corrective	
	ipment item does not require qualif	ication
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
I.a Qualified) I.b Modification	II.c Qualified Life Deficiency	
I.a Qualification Not Established	III.a Exempt III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Availab	le

 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. 95

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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.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.

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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. 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.

NRC Contract No. NRC-03-79-118 Franklin Research Center FRC Project No. C5257 A Division of The Franklin Institute FRC Assignment No. 13 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 FRC Task No. 459 EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

Page

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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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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	5 a, 5b, 5c, 5d, 5e, 5f, 5 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b -

72, 7b, 7c

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. 455

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

MMARY OF LICENSEE RESPONSES TO THE N	IRC SER - ONLY CHECKED ITEMS ARE APPLICABL
<pre> <u> The Licensee (has/has not) provide </u></pre>	ed a response to the SER concerns.
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is en exposed to the applicable DBE
The Licensee has presented informa outstanding qualification deficien	
_ The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by the tem.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualification vironmental qualification.
ESIGNATION OF RESULTANT NRC QUALIFIC	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
CIRCLED ITEM ONLY: (See Section 3 of a Qualified .b Modification I.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt

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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. 76

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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

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DESIGNATION: X = CATEGORY

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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

Page 3a

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _ 45

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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:

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Checksheet Page No.

3a, 3b, 3c, 3d

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ta, 40, 40, 40, 40,

5a, 5b, 5c, 5d, 5e, 5f,

Equipment Item Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

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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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T	Auth and Race Streets. Phila. Pa. 19103 (213) 448-1000 PHC Task NO
EQUI	MENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.
SUMM	ARY 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
	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.
DEST	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW
- C.	RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
	Qualified Life Deficiency
	Modification III.a Exempt
	a Qualification Not Established III.b Not in Scope
II.	Not Qualified IV Documentation Not 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. 97 EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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)

DESIGNATION: X = CATEGORY

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

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

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. 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. 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	40, 40, 40, 40, 40, 4E
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	- 6a, 6b-

7a, 7b, 7c-

Maintenance and Replacement Schedule Summary

A Division of The Franklin Institute 20th and Race Streets, Phila, Pa. 19103 (215) 418-100

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 450

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20th and Race Streets. Phila., Pa. 19103 (215) 448-1000	FRC Task No
QUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM NO.
UMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICAB
X The Licensee (has/kas not) provide	d a response to the SER concerns.
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is en exposed to the applicable DBE
X The Licensee has presented informa outstanding qualification deficien	
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	
Equipment relocation above Relocate or shield equipme	submergence level
Verify qualification by ad	ditional (testing/analysis)
Equipment relocation to a	mild environment
Qualification testing of e	equipment in progress
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualification vironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFIC	ATION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3 d	or chis ink for Legend)
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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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. 98

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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)

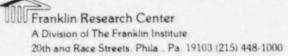
NRC QUALIFICATION CATEGORY

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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.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 28

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.

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0000	Franklin Research Center	
	A Division of The Franklin Institute	
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NRC Contract No. NRC-	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. 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	Ja
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forme	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, 5o, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, 6b -

7a, 7b, 7c --

Franklin Research Center	
A Division of The Franklin Institute	
20th and Race Streets. Phila . Pa.	19103 (215) 448-1000

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

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SUMMARY OF LICENSEE RESPONSES TO THE NR	C SER - ONLY CHECKED ITEMS ARE APPLICABLE:
DOLLARI OF BICLIODE REDIONDED TO THE WA	
X The Licensee (has/bas not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informat outstanding qualification deficiency	
The Licensee (has/has not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
Justification for interim opera Licensee for this equipment ite	tion (has/has not) been provided by the m.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	qualified equipment
Equipment relocation above	submergence level
Relocate or snield equipmer	t from radiation source
Verify qualification by add	litional (testing/analysis)
Equipment relocation to a m	
Qualification testing of eq	
Other (
	r information for this equipment item is for justification for interim
	and a second
	vided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from env	ment item does not require qualification ironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o	TION EVALUATION CATEGORY BASED ON REVIEW f this TER for Legend)
I.a Qualified	II.c Qualified Life Deficiency
I.b Modification	III.a Exempt
II.a Qualification Not Established	-
II.b Not Qualified	IV Documentation Not Available
And the second se	

NRC QUALIFICATION CATEGORY

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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 Estable 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 Temperaturo 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 nour + Function Time) Satisfied	
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	

DESIGNATION: X = CATEGORY

Equipment Qualified I.a ____ Equipment Qualification Pending Modification I.b 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.

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

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. 150

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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]

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DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY: (See Section 3 of this TER for Legend) R, T, QN, RT, P, H, CS, (A,) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None, Not stated, Not applicable LISTING OF APPLICABLE CHECKSHEETS: Contents Checksheet Page No. Equipment Item la 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 4ar 4b, 4c, 4d, 4er Equipment Environmental Qualification Review 5a7 5b7 5c7 5d, 5c, 5f, 59, 5h, 51, 5j Installed TMI Lessons Learned Implementation 60, 60 Equipment Summary

Maintenance and Replacement Schedule Summary

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

UMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APPLICABL
X The Licensee (has/ha s not) provide	d a response to the SER concerns.
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	cally stated that the equipment is en exposed to the applicable DBE
X The Licensee has presented informa outstanding qualification deficien	
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided by the tem.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	qualified equipment
Equipment relocation above	e submergence level
Relocate or shield equipme	ent from radiation source
	iditional (testing/analysis)
Equipment relocation to a	mild environment
Qualification testing of e Other (Adulpment in progress
Utilet (······································
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from env	pment item does not require qualification vironmental qualification.
ESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 of	ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
.a Qualified	II.c Qualified Life Deficiency III.a Exempt
II.a Qualification Not Established	III.b Not in Scope
II.p Not Qualified	IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100		
EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
DESIGNATION:		
$\frac{NRC REQUIREMENTS}{X} = DEFICIENCY$		
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		
c 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)		
DESIGNATION:		
NRC QUALIFICATION CATEGORY 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	
VI	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. 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

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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. 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: Contents Checksheet Page No. Equipment Item la 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, 4£ Equipment Environmental Qualification Review 5a, 5b, 5c, 5d, 5e, 5f; 5g, 5h, 51, 5j Installed TMI Lessons Learned Implementation -6a, 6b Equipment Summary

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Maintenance and Replacement Schedule Summary

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QUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM NO. 10
SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
The Licensee (has/has not) provide	d a response to the SER concerns.
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	
X The Licensee has presented informa outstanding qualification deficien	
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment
that can be construed as a bas operation.	er information for this equipment item sis for justification for interim
corrective action. (Schedule	for accomplishing the corrective .)
and/or should be exempted from env	pment item does not require qualification vironmental qualification. ATION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3 of	of this TER for Legend)
I.a Qualified I.b Modification	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope
II.a Qualification Not Established	TTTPD HOC TH DOODC

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. [D]

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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.

The ficensee prinided the required documents on rodiation and aging

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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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVER OF EQUIPMENT ITEM NO. 10/

Checksheets 5a thru 5e have been removed due to the

proprietary nature of information contained therein.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LOL

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, 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:

Contents Checksheet Page No. Equipment Item la 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, 40, 4d, 4e, Equipment Environmental Qualification Review 5a, 5b, 5c, 5d, 5e, 51, 5g, 5h, 5i, 5j Installed TMI Lessons Learned Implementation 6a, 6b,

Equipment Summary

Maintenance and Replacement Schedule Summary

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FRC Task No. 459

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

- X The Licensee (has/bas 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.
- X 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)

	Qualified	II.c Qualified Life Deficienc	2Y
1.0	Modification	III.a Exempt	
II.a	Qualification Not Established	III.b Not in Scope	
II.b	Not Qualified	IV Documentation Not Availa	able

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	FRC Task No. 459
UIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM NO. 2
EQUIPMENT ENVIRONMENTAL	QUALIFICATION SUMMARY FORM
	DESIGNATION: X = DEFICIENCY
C REQUIREMENTS	
ocumented Evidence of Qualification dequate Similarity Between Equipment ging Degradation Evaluated Adequated	t and Test Specimen Established
ualified Life or Replacement Schedul	Le Established (If Required)
rogram Established to Identify Aging	g Degradation
riteria Regarding Aging Simulation S	Satisfied (If Required)
riteria Regarding Temperature/Pressu	ire Exposure:
o Peak Temperature Adequate	
o Peak Pressure Adequate	
o Duration Adequate	
o Required Profile Enveloped Ade	
o Steam Exposure (If Required) A	Adequate
riteria Regarding Spray Satisfied riteria Regarding Submergence Satis	fied
riteria Regarding Radiation Satisfic	ed
riteria Regarding Test Sequence Sat	isfied
riteria Regarding Test Failures or 1	Severe Anomalies
(If Any) Satisfied	
riteria Regarding Functional Testin	g Satisfied
riteria Regarding Instrument Accura	cy Satisfied
est Duration Margin (1 hour + Funct	ion Time) Satisfied
riteria Regarding Margins Satisfied	(NUREG-0588, Cat. I)
	DESIGNATION
NRC QUALIFICATION CATEGORY	$\underline{X} = CATEGOR$
L.a Equipment Qualified	_X_
L.b Equipment Qualification Pend	ing Modification
II.a Equipment Qualification Not	
II.b Equipment Not Qualified	
	irements Except Qualified Life
or Replacement Schedule Just	
III.a Equipment Exempt From Qualit	10401011
III.a Equipment Exempt From Qualif III.b Equipment Not in the Scope of	of the Qualification Review

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

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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.

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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, 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:

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Maintenance and Replacement Schedule Summary

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 203

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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. X 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 gualified 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 III.b Not in Scope II.b Not Qualified IV Documentation Not Available

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QUIPMENT ENVIRONMENTAL QUALI	IFICATION REVIEW OF EQUIPM	MENT ITEM NO. 10.
EQUIPMENT ENVIRONMENT	TAL QUALIFICATION SUMMARY FO	RM
		DESIGNATION:
IDC DECUIDEMENTS		X = DEFICIENCY
NRC REQUIREMENTS		
Documented Evidence of Qualification	on Adequate	
Adequate Similarity Between Equipme	ent and Test Specimen Establ	ished
Aging Degradation Evaluated Adequa	tely	
Qualified Life or Replacement Sche	dule Established (If Require	d)
Program Established to Identify Ag	ing Degradation	
Criteria Regarding Aging Simulatio	n Satisfied (if Required)	
Criteria Regarding Temperature/Pre	ssure Exposure:	
o Peak Temperature Adequate		
o Peak Pressure Adequate		
o Duration Adequate o Required Profile Enveloped	Adequately	
o Steam Exposure (If Required	1) Adequate	
Criteria Regarding Spray Satisfied	1	
Criteria Regarding Submergence Sat	isfied	
Criteria Regarding Radiation Satis	sfied	
Criteria Regarding Test Sequence S	Satisfied	
Criteria Regarding Test Failures of	or Severe Anomalies	
(If Any) Satisfied		
Criteria Regarding Functional Test	ting Satisfied	
Criteria Regarding Instrument Accu	aracy Sat stied	
Test Duration Margin (1 hour + Fur	nction Time) Satisfied	
Criteria Regarding Margins Satisfi	led (NUREG-US08, Cat. 1)	
		DESIGNATION:
NRC QUALIFICATION CATEGORY		X = CATEGORY
		2.4

I.a	Equipment Qualified	Δ
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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 223

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. A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000

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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:

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-6a, 6b-

7a, 7b, 7c

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	CATION REVIEW OF EQUIPMENT ITEM NO. 10
JMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
The Licensee (has/has not) provide	ed a response to the SER concerns.
X The Licensee (has/h as_not) specif: qualified.and/os_will function who environmental_service_conditions	
The Licensee has presented informa outstanding qualification deficier	
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipment been fully established.
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided by the tem.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (e submergence level ent from radiation source dditional (testing/analysis) mild environment
	er information for this equipment item is for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective)
The Licensee states that the equip and/or should be exempted from env	ment item does not require qualification rironmental qualification.
SIGNATION OF RESULTANT NRC QUALIFICA CIRCLED ITEM ONLY: (See Section 3 o	TION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
a Qualified Modification	II.c Qualified Life Deficiency III.a Exempt
.a Qualification Not Established	III.b Not in Scope IV Documentation Not Available

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

Page 2

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.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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _459

Page 3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

LICENSEE RESPONSE TO NRC SER

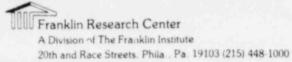
Surveillance and Preventive Maintenance

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.

<u>Corrective Action - Surveillance and Preventive Maintenance Program</u> The equipment will be incorporated into the plant Surveillance and Preventative Maintenance Program.



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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

Not stated, Not applicable

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LISTING OF APPLICABLE CHECKSHEETS:

Contents	Chec	kshe	et F	age	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	356,	36,	36		
System Consideration Review	44,	始,	405.,	4月,	46,	¥£
Equipment En Conmental Qualification Review			96. 54.		¢€,	\$₹,
Installed TMI Lessons Learned Implementation Equipment Summary	6,34	6/2				
Maintenance and Replacement Schedule Summary	70,	70,	7,6			

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

Page
Ib

UMM	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X	The Licensee (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:
	<pre>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.</pre>
	The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
À	The Licensee states that the equipment item does not require qualification and 🔀 should be exempted from environmental qualification.
CI	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
.b I.a	Qualified Modification Qualification Not Established Not Qualified II.c Qualified Life Deficiency III.a Exempt III. Not in Scope IV Documentation Not Available

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

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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

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DESIGNATION: X = CATEGORY

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I.a	Equipment Qualified	
I.b	Equipment Qual fication 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	_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. <u>459</u>

Page 3a

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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.

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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:

Checksheet Page No. Contents la Equipment Item 1b Summary of Licensee Responses to the NRC SER 2 Equipment Environmental Qualification Summary Forms 3a, 36, 36, 34 Licensee Response to NRC SER 4a, 4b, 4c, 44, 46, 4E System Consideration Review 3a, 56, 50, 50, 50, 5e, 5E, Equipment Environmental Qualification Review 59, 50, 92, 5% 6a, 6b. Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

76, 76, 76

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

Page	į
Ib	

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	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
K The	Licensee (has/has not) provided a response to the SER concerns.
qua	Licensee (has/has not) specifically stated that the equipment is lified and/or will function when exposed to the applicable DBE rironmental service conditions.
	Licensee has presented information which shows there are no standing qualification deficiencies.
	Licensee (has/has not) proposed a corrective action for this equipment m 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:
	<pre>Equipment replacement with qualified equipment Equipment modification Equipment relocation above submargence 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 ()</pre>
-	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)
X The	E Licensee states that the equipment item does not require qualification does not require dualification.
and	TION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW
ESIGN	ED ITEM ONLY: (See Section 3 of this TER for Legend)

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106 EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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) DESIGNATION:

NRC QUALIFICATION CATEGORY

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X = CATEGORY

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I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	-
II.b	Equipment Not Qualified	and the state of the
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	X
IV	Documentation Not Made Available	-

MILD ENVIRONMENT

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _459

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 <u>not</u> 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.

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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

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- Equipment does not provide a accident. Equipment Environmental Qualification is not required by the DOR Guide-lines. (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 _____ Failure of the primary equipment can backup (equipment/system) is environmentally qualified and appears to meet single active on page 4b. (NRC Qualification Evaluation Category IIIa)

3 18

Reason for Non-Concurrence

Equipment does not provide a _____ Backup (equipment/system) is not safety function or mitigate the consequences of a design basis _____ 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.
- result in erroneous indication which could mislead an operator.
- failure criterion. See note (1) ____ Requirement for continued function-on page 4b. (NRC Qualification _____ ing throughout the post-accident period necessitates environmental qualification.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

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 page46)
- _X_ Resultant NRC Qualification Evaluation Category (
- 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.

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4c

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. **I+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

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In view of the foregoing discussion, i + 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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0000	Franklin Research Center
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NRC Cor	ntract No. NRC-03-79-118
FRC Pro	ect No. C5257
FRC Ass	ignment No. 13
	k No. 459

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EQUIPMENT E. VIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 207

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 DEFICIENCE IDENTIFIED DE THE MAC OBA	~ ~ ~ ~	LAN THEY				
(See Section 3 of this TER for Legend)		_				
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN,	, SEI	N Q	I) RI	PS, 1	None	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Che	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	30,	36.	34		
System Consideration Review	4a,	4b,	4c,	4×,	£.	4 K
Equipment Environmental Qualification Review		55, 531,			5e,	5€,
Installed TMI Lessons Learned Implementation Equipment Summary	6á.	60				
Maintenance and Replacement Schedule Summary	74.	70,	%c			

DESIGNATION FOR DEPICTENCY IDENTIFIED BY THE NEC SER - CIRCLED ITEM(S) ONLY:

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. 107
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function who environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented inform outstanding qualification deficies		
The Licensee (has/has not) proposition item whose qualification has not	ed a corrective action for this equi been fully established.	pment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided b tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification Equipment relocation abov		
Relocate or shield equipm		
Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of Other (equipment in progress)
	er information for this equipment is sis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective	.)
X The Licensee states that the equi and/ or should be exempted from en		cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	The second s	REVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification II.a Qualification Not Established	III.a Exempt	
II.b Not Qualified	IV Documentation Not Availabl	.e

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS Documented Evidence of Qualitication 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

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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

MILD ENVIRONMENT

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 202

LICENSEE RESPONSE TO NRC SER

Non-Harsh Environment - Mitigating Equipment

This equipment is exempt from qualification because it is <u>not</u> 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.

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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

- 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 Guide-lines. (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) ____ Requirement for continued functionon 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.
 - ing throughout the post-accident period necessitates environmental qualification.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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)
- X Other (see page 4b)
- X Resultant NRC Qualification Evaluation Category (7776/IIIb)
- X Note 1: The Licensee (Hars/ 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 <u>3a</u>)

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.

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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. **I**+15 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, i + 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. 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:

13	-	-	14	-	-	-	-
-	0	n	T.	е	n	С	S
_	-		-	-		-	-

Equipment Item

Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

la lb 2 3a, 3b, 3c, 3d 4a, 4b, 4c, 4d, 4e, 4E 5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j

6a, 6b-

7a, 70, 70-

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QUIPMENT	ENVIRONMENTAL QUALIFICATION	REVIEW OF EQUIPMENT ITEM NO.	10
SUMMARY OF	LICENSEE RESPONSES TO THE MRC SER	R - ONLY CHECKED ITEMS ARE APPLIC.	ABLE
🗙 Tne Li	censee (has/ has not) provided a re	sponse to the SER concerns.	
qualif	censee (has/has not) specifically ied and/or will function when expo nmental service conditions.		
	censee has presented information with a nding qualification deficiencies.	which shows there are no	
	censee (has/has not) proposed a console qualification has not been for		nt
	stification for interim operation censee for this equipment item.	(has/has not) been provided by t	he
Co	prrective action specified by the I	Licensee:	
=	Equipment replacement with qual: Squipment modification Equipment relocation above subme Relocate or shield equipment fro Verify qualification by addition Equipment relocation to a mild of	ergence level om radiation source hal (testing/analysis)	
=	Qualification testing of equipme Other ()
th	e Licensee has provided other info at can be construed as a basis for peration.		
co	e Licensee (has/has not) provided prrective action. (Schedule for a ction	a schedule for the proposed complishing the corrective .)	
X The Li and/or	censee states that the equipment should be exempted from environm	item does not require qualificati ental qualification.	on
	ON OF RESULTANT NRC QUALIFICATION ITEM ONLY: (See Section 3 of thi		EW
I.a Quali I.b Modif		Qualified Life Deficiency	
II.a Quali	fication Not Established	.a Exempt .b Not in Scope	
II.b Not Q	Juarried IV	Documentation Not Available	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

Eccumented 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

I.a Equipment Qualified

X = CATEGORY

DESIGNATION:

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	_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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

Page 4a

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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

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- 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)

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.
- failure criterion. See note (1) _____ Requirement for continued functionon page 4b. (NRC Qualification _____ ing throughout the post-accident Evaluation Category IIIa) _____ period necessitates environmental qualification.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

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 (2006/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

- The equipment's accident mitigating function is completed Able, it is not technically sound to prior to the onset of the hostile environment. No subsequent 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LOB

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, 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:

Contents	Chec	ckshe	eet I	Page	llo.	
Equipment Item	là					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	36,	316,	36,	ж		
System Consideration Review	44,	40.	4%,	40,	¢ę,	4€
Equipment Environmental Qualification Review			59. 59.		5€,	58,
Installed TMI Lessons Learned Implementation Equipment Summary	θa,	6)6				
Maintenance and Replacement Schedule Summary	76,	7,0,	7.c			

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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 I.b Modification II II.a Qualification Not Established II II.b Not Qualified IV

II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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>×</u>
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. 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, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable mildenvironment

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Chec	kshe	et I	age	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1b					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	30,	316,	36,	36		
System Consideration Review	44,	45.	48,	Ad.	4,	42
Equipment Environmental Qualification Review		310, 511,		54, 59	36,	58,
Installed TMI Lessons Learned Implementation Equipment Summary	64.	90				
Maintenance and Replacement Schedule Summary	74.	752.	70			

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QUIPME	ENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPME	ENT ITEM NO. // (
UMMARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEM	S ARE APPLICABLE
Tne	e Licensee (has/has not) provided a response to the SER co	oncerns.
qual	e Licensee (has/has not) specifically stated that the equi alified and/or will function when exposed to the applicabl vironmental service conditions.	
	e Licensee has presented information which shows there are tstanding qualification deficiencies.	e no
	E Licensee (has/has not) proposed a corrective action for em whose qualification has not been fully established.	this equipment
-	Justification for interim operation (has/has not) been p Licensee for this equipment item.	provided by the
	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	5)
	Equipment relocation to a mild environment	
	Qualification testing of equipment in progress Other ()
	_ The Licensee has provided other information for this equ	ipment item
	that can be construed as a basis for justification for i operation.	
_	The Licensee (has/has not) provided a schedule for the p corrective action. (Schedule for accomplishing the corr action	
(1)		
and/	e Licensee states that the equipment item does not require d/or should be exempted from environmental qualification.	e qualification
	ATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY E LED ITEM ONLY: (See Section 3 of this TER for Legend)	BASED ON REVIEW
I.a Jua	ualified II.c Qualified Life Def	ficiency
	odification III.a Exempt	reserved
	ualification Not Established III.b Not in Scope	
II.b Not	ot Qualified IV Documentation Not	Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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) DES1_ ATION: X = CATEGORY NRC QUALIFICATION CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b × Equipment Qualification Not Established II.a IJ.D Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life 11.C or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.D Equipment Not in the Scope of the Qualification Review Documentation Not Made Available IV

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. 111

Equipment Item No. 111 Electric Motor Located in the Reactor Building General Electric Model 5K818841A134 Drives Emergency Condensate 'ransfer Pump (M7-28) Licensee reference not cited Required Operating Time: Cortinuous 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3k, 3k, 3k
System Consideration Review	44, 45, 40, 40, 40, 40
Equipment Environmental Qualification Review	34, 35, 36, 34, 34, 56, 36, 39, 34, 34, 33
Installed TMI Lessons Learned Implementation Equipment Summary	¢α, φά
Maintenance and Replacement Schedule Summary	76, 76, 76

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QUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM N	10. //
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APPL	ICABL
X The Licensee (has/ has not) provide	ed a response to the SER concerns.	
The Licensee (has/hac not) specifi qualified and/or will function whe environmental service conditions.		
The Licensee has presented information outstanding qualification deficier		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equip been fully established.	ment
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided by tem.	the
Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above		
Relocate or shield equipme	ent from radiation source	
Verify qualification by ac Equipment relocation to a	dditional (testing/analysis)	
Qualification testing of e		
Other ()
	er information for this equipment ite sis for justification for interim	em
	ovided a schedule for the proposed for accomplishing the corrective)
The Licensee states that the equi and/or should be exempted from en-	pment item does not require qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	a second	EVIEW
I.a Qualified I.b Modification	II.c Qualified Life Deficiency III.a Exempt	
II.a Qualification Not Established	III.b Not in Scope	
II.b Not gualified	IV Documentation Not Available	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION	SUMMARY FORM
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Speci Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Re Criteria Regarding Temperature/Pressure Exposure: o Peak Temperature Adequate o Duration Adequate o Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Functional Testing Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Ca	fied
NRC QUALIFICATION CATEGORY	$\frac{\text{DESIGNATION}}{X} = \text{CATEGORY}$
I.a Equipment Qualified I.b Equipment Qualification Pending Modification	n
II.a Equipment Qualification Not Established II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements Except or Replacement Schedule Justified	Qualified Life

III.a Equipment Exempt From Qualification

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III.b Equipment Not in the Scope of the Qualification Review
IV Documentation Not Made Available

See page 3a

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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.

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. 1/2

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]

(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: Checksheet Page No. Contents la Equipment Item Summary of Licensee Responses to the NRC SER 1b 2 Equipment Environmental Qualification Summary Forms 3a, 36, 36, 36 Licensee Response to NRC SER 44, 46, 46, 48, 48, 46, 4E System Consideration Review 5a, 50, 56, 5d, 5e, 5f, Equipment Environmental Qualification Review -59, 5h, 51, 51 8a, 68 Installed TMI Lessons Learned Implementation Equipment Summary 7.4, 7th, 7C Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/has not) provided	d a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	cally stated that the equipment is n exposed to the applicable DBE
X The Licensee has presented information outstanding qualification deficient	
The Licensee (has/has not) proposed item whose gualification has not be	d a corrective action for this equipment een fully established.
Justification for interim operation Licensee for this equipment ite	ation (has/has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a re Qualification testing of equipment (submergence level ent from radiation source ditional (testing/analysis) mild environment
that can be construed as a bas operation.	er information for this equipment item sis for justification for interim
corrective action. (Schedule	for accomplishing the corrective)
— The Licensee states that the equip and/or should be exempted from env	oment item does not require qualification vironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICA - CIRCLED ITEM ONLY: (See Section 3 o	TION EVALUATION CATEGORY BASED ON REVIEW
- CINCUED IIE ONLI: (See Section 3 0	(L CHIS IER LOF Legend)
I.a Qualified	II.c Qualified Life Deficiency
I.b Modification	III.a Exempt
(II.a) Qualification Not Established	
II.b Not Qualified	IV Documentation Not Available

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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. 4 59

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

NRC REQUIREMENTS

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)

DESIGNATION:

NRC QUALIFICATION CATEGORY

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 Scheaule 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.

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 3c

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.

Qualified Aging for Life of Plant

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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 planc Surveillance and Preventative Maintenance Program. A Division of The Franklin Institute 20th and Race Streets. Phila... Pa. 19103 (215) 448-1000

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 213

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

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LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 318, 36, 30-
System Consideration Review	40, 30, 40, 40, 40, 40, 40
Equipment Environmental Qualification Review	5a, 56, 9x, 5d, 5e, 5f, 9x, 5h, 3x, 3x
Installed TMI Lessons Learned Implementation Equipment Summary	6 <u>8</u> , 6 <u>8</u>
Maintenance and Replacement Schedule Summary	201, 70, 20

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. <u>4.59</u>

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QUIPMENT ENVIRONMENTAL QUALIFICA	ATION REVIEW OF EQUIPMENT ITEM NO. 113
UMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/has not) provide	d a response to the SER concerns.
	cally stated that the equipment is
The Licensee has presented informa outstanding qualification deficient	tion which shows there are no cies.
The Licensee (has/has not) propose item whose qualification has not b	d a corrective action for this equipment een fully established.
Justification for interim oper Licensee for this equipment it	ation (has/has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	a second s
Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a	nt from radiation source ditional (testing/analysis) mild environment
Qualification testing of e Other (quipment in progress
The Licensee has provided othe that can be construed as a bas operation.	r information for this equipment item is for justification for interim
corrective action. (Schedule	vided a schedule for the proposed for accomplishing the corrective .)
The Licensee states that the equip and/or should be exempted from env	oment item does not require qualification vironmental qualification.
ESIGNATION OF RESULTANT NRC QUALIFICA CIRCLED ITEM ONLY: (See Section 3 o	TION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
.a Qualified .b Modification	II.c Qualified Life Deficiency III.a Exempt
I.a Qualification Not Established I.b Not Qualified	III.b Not in Scope IV Documentation Not Available

A Division of The Franklin Institute 20th and Race Streets. Phila. Pa. 19103 (215) 448-1000	NRC Contract No. NRC-03-79-118 FHC Project No. C5257 FRC Assignment No. 13 FRC Task No. 459	Page 2
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = P FICIENCY

> DESIGNATION: X = CATEGORY

NRC REQUIREMENTS

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 CATEGONS

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	Docudentation 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. 11.3

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. Franklin Research Center A Division of The Franklin Institute 20th and Race Streets, Phila, Pa 19103 (215) 448-1000

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NRC	Contract No. NRC-03-78-118
FRC	Project No. C5257
FRC	Assignment No. 13
FRC	Task No. 4.59

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

Checksheets Ja, 5d. and 5f 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. 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

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LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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, 50, 5d, 50, 5£, -5g, 5h, 5i, 5j

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

70, 70, 70

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EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION REVIEW OF EQUIPMENT ITEM	NO. 114
SUMMARY OF LICENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) provide	ed a response to the SER concerns.	
The Licensee (has/has not) specifi qualified and/or will function whe environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented information outstanding qualification deficier		
The Licensee (has/has not) propose item whose qualification has not b	ed a corrective action for this equipeen fully established.	ipment
Justification for interim oper Licensee for this equipment it	ration (has/has not) been provided tem.	by the
Corrective action specified by	y the Licensee:	
Equipment replacement with Equipment modification	h qualified equipment	
Equipment relocation above		
Relocate or shield equipme	ent from radiation source dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of (Other (equipment in progress	
Other (/
	er information for this equipment is sis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective	
\underline{X} The Licensee states that the equiand/or should be exempted from en	pment item does not require qualif.	ication
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	A REAL PROPERTY AND A REAL PROPERTY AND A REAL PROPERTY RE	REVIEW
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 Availab	

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NRC QUALIFICATION CATEGORY

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. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Duracion Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

DESIGNATION: X = CATEGORY

ī.a Equipment Qualified I.b Equipment Qualification Pending Modification × Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.D VI 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. Counsil to D. M. Crutchfield, dated December 30, 1980, Attachment 2."

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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. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 215

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]

(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: Checksheet Page No. Contents la Equipment Item 1b Summary of Licensee Responses to the NRC SE ? 2 Equipment Environmental Qualification Summary Forms 3a, 356, 36, 3d Licensee Response to NRC SER 46, 40, 46, 46, 46, 48, System Consideration Review 54, 56, 5c, 5d, 5e, 5t, Equipment Environmental Qualification Review 39, 38, 34, 35 64, 615 Installed TMI Lessons Learned Implementation Equipment Summary Maintenance and Replacement Schedule Summary 7a, 7a, 7c, 7c

DESIGNATION FOR DEFICIENCY IDENTIFIED BY 'THE NRC SER - CIRCLED ITEM (S) ONLY:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115 SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X 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 (gois bent Equipment modification Equipment relocation above submergence Relocate or shield equipment from radiocida source Verify qualification by additional (testing/analysis) Equipment relocation to a mild environment Qualification testing of equipment Other (The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interin operation. The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action X 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

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

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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 S	pecimen Established
ging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Establish	
Program Established to Identify Aging Degradatio	
Criteria Regarding Aging Simulation Satisfied (I	(f 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 Anoma	
(If Any) Satisfied	11160
Criteria Regarding Functional Testing Satisfied	
Criteria Regarding Instrument Accuracy Satisfied	
Test Duration Margin (1 hour + Function Time) Sa	
Criteria Regarding Margins Satisfied (NUREG-0588	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	ation
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements Ex	cept 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

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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. 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. <u>459</u>

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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]

(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: Checksheet Page No. Contents la Equipment Item 1b Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms 2 3a, 36, 38, 38 Licensee Response to NRC SER 40, 416, 40, 40, 40, 40, AE System Consideration Review 50, 36, 36, 50, 36, 36, Equipment Environmental Qualification Review 54, 5K, 5k, 5% Installed TMI Lessons Learned Implementation ba, the Equipment Summary 72 72 To Maintenance and Replacement Schedule Summary

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM (S) ONLY:

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: Y 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 gualification 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 .) X The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental gualification. 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 III.b Not in Scope | IV Documentation Not Available II.b Not Qualified

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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. 116

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequat	
Adequate Similarity Between Equipment and st Specimen Estab	olished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	red)
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	Sector Sector
o Duration Adequate	
o Required Profile Enveloped Adequately	
o Steam Exposure (If Required) Adequate	atternative for N
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-0589. Cat. I)	

DESIGNATION: X = CATEGORY

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Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life

or Replacement Schedule Justified III.a Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review III.b

Documentation Not Made Available IV

NRC QUALIFICATION CATEGORY

I.a

I.b II.a

II.b

II.c

Equipment Qualified

MILD ENVIRONMENT

A Division of The Franklin Institute 20th and Race Streets. Phila. Po. 19103 (215) 448-1000

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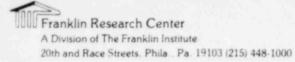
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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.



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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, QI, 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	32, 38, 35, 36
System Consideration Review	Ad, ADL ADL ADL ADL AD
Equipment Environmental Qualification Review	58, 512, 50, 50, 50, 58, 58, 58, 512, 512, 51
Installed TMI Lessons Learned Implementation Equipment Summary	5a, 30
Maintenance and Replacement Schedule Summary	26, 26, Da

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM N	10. 117
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPL	ICABLE:
The Licensee (has/has not) provid	led a response to the SER concerns.	
	fically stated that the equipment is new exposed to the applicable DBE	
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	sed a corrective action for this equip been fully established.	ment
Justification for interim ope Licensee for this equipment i	eration (has/has not) been provided by item.	, the
Corrective action specified b	by the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipm Verify qualification by a Equipment relocation to a Qualification testing of Other (ve submergence level ment from radiation source additional (testing/analysis) a mild environment equipment in progress	
The Licensee has provided ot	her information for this equipment ite asis for justification for interim	em
corrective action. (Schedule	rovided a schedule for the proposed e for accomplishing the corrective)
— The Licensee states that the equand or should be exempted from end or should be exempted from end of the state of the	ipment item does not require qualificant of the second sec	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON R of this TER for Legend)	EVIEW
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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

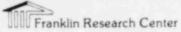
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen	Established
Aging Degradation Evaluated Adequately	
Qualified Life of Replacement Schedule Established (If R	equired)
Program Establighed to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Requir	ed)
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. 1	I)

NRC QUALIFICATION CATEGORY

DESIGNATION: X = CATEGORY

1

MILD ENVIRONMENT



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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 XI1-5 [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) mild environment

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Chec	kshe	et P	age	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	30	38,	ж,	32		
System Consideration Review	4×,	ste,	40,	44.	42,	AR
Equipment Environmental Qualification Review			5年,		€,	我,
Installed TMI Lessons Learned Implementation Equipment Summary	da,	616				
Maintenance and Replacement Schedule Summary	Bal,	76,	De			

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NRC Contract No. NRC-	-03-79-119
FRC Project No. C5257	
FRC Assignment No. 13	-
FRC Assignment No. 13 FRC Task No. 45	9

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1	b	

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	III.b Not in Scope]
II.b Not Qualified	IV Documentation Not Available

 NRC Contract No. NRC-03-79-118
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 20th and Race Screets. Phila.. Pa. 19103 (215) 448-1000
 FRC Assignment No. 13
 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LL&

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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

DESIGNATION: X = DEFICIENCY

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.D	Equipment Not in the Scope of the Qualification Review	<u>×</u>
IV	Documentation Not Made Available	

MILD ENVIRONMENT



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 219

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, 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:

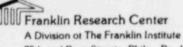
Contents	Chee	ckshe	eet 1	Page	No.		
Equipment Item	la						
Summary of Licensee Responses to the NRC SER	lb						
Equipment Environmental Qualification Summary Forms	2						
Licensee Response to NRC SER	36,	3¥,	36,	34			
System Consideration Review	.26.	40,	48,	40,	魏,	<u>4</u>	
Equipment Environmental Qualification Review		5%a, 5%a,		52°, 55	56,	¥,	
Installed TMI Lessons Learned Implementation Equipment Summary	6a,	56					
Maintenance and Replacement Schedule Summary	34,	70,	70				

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	20th and Race Streets. Phila Pa 19103 (215) 448-1000

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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)
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 IIII.b Not in Scope
II.b Not Qualified IV Documentation Not 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. 119

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

PRC 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

I.a

I.b

II.a II.b

II.c

Equipment Qualified Equipment Qualification Pending Modification _____ _____ Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified

- III.a Equipment Exempt From Qualification
- Equipment Not in the Scope of the Qualification Review III.b
- Documentation Not Made Available IV

MILD ENVIRONMENT

DESIGNATION: X = CATEGORY 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. <u>459</u>

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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

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LISTING OF APPLICABLE CHECKSHEETS:

Contents	Chec	KSNE	et i	age	NO.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	3,8,	38		
System Consideration Review	4,2,	450,	₩.,	4d.,	4.	44
Equipment Environmental Qualification Review			5,6-, 3×,		5€,	¥,
Installed TMI Lessons Learned Implementation Equipment Summary	6á,	628				
Maintenance and Replacement Schedule Summary	7/2.,	70,	26			

NRC Contract No. NRC-03-79-118 Page FRC Project No. C5257 Franklin Research Center A Division of The Franklin Institute FRC Assignment No. 13 Ib 20th and Race Streets. Phila .. Pa 19103 (215) 448-1000 FRC Task No. 459 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 I.b Modification II.a Qualification Not Established II.b Not Qualified II.b Not Qualified II.b Not Qualified II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

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. <u>459</u>

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DESIGNATION: X = CATEGORY

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 Feak Temperature Adequate
o Peak Pressure 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

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.

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see p-3a

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. <u>459</u>

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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.

Image: StreetsPailNRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 452PageI a

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: Checksheet Page No. Contents la Equipment Item Summary of Licensee Responses to the NRC SER 1b 2 Equipment Environmental Qualification Summary Forms 3a, 36, 35, 35 Licensee Response to NRC SER 30, 30, 30, 30, 30, 40, 3x System Consideration Review 36, 30, 30, 34, 36, 36, Equipment Environmental Qualification Review 1. 56, 54, 54 Ba, 50 Installed TMI Lessons Learned Implementation Equipment Summary the the the Maintenance and Replacement Schedule Summary

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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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20th and Race Streets. Phila. Pa. 19103 (215) 448-1000	FRC Task No. 459	10
QUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 12
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE
X The Licensee (has/has_not) provid	ed a response to the SER concerns.	
The Licenses (has/has not) specif qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equip been fully established.	pment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided b tem.	y the
Corrective action specified b	by the Licensee:	
Equipment replacement wit	h qualified equipment	
Equipment relocation abov		
Relocate or shield equipm	ent from radiation source	
Verify qualification by a Equipment relocation to a		
Qualification testing of		
Other ()
The Licensee has provided oth that can be construed as a ba operation.	er information for this equipment it asis for justification for interim	em
The Licensee (has/has not) pr corrective action. (Schedule action	ovided a schedule for the proposed for accomplishing the corrective)
X The Licensee states that the equi and/or should be exempted from en	pment item does not require qualific nvironmental qualification.	ation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON R of this TER for Legend)	EVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification II.a Qualification Not Established	III.a Exempt	
II.a Qualification Not Established	III.b Not in Scope IV Documentation Not Available	
	in postmentation not available	

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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

1

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

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

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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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:

Contents	Chec	kshe	eet I	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	×,	対		
System Consideration Review	44.	ж,	¥c,	3d.,	¥6.,	¢€
Equipment Environmental Qualification Review	5%, 5%,	364 516,	¥.	94. 54	Se.	*
Installed TMI Lessons Learned Implementation Equipment Summary	5a.	ĝić.				
Maintenance and Replacement Schedule Summary	76,	26,	26			

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. <u>459</u>	Page Ib
EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEM	NO. 122
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AP	PLICABLE:
X The Licensee (has/has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.		
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equ been fully established.	ipment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification	h qualified equipment	
Equipment relocation abov		
Relocate or shield equipm	ent from radiation source	
Verify qualification by a Equipment relocation to a		
Qualification testing of		
Other ()
	er information for this equipment i sis for justification for interim	tem
corrective action. (Schedule	ovided a schedule for the proposed for accomplishing the corrective	
	pment item does not require qualifi	lcation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
I.a Qualified I.b Modification II.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Availabl	Le

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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. /22

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY

DESIGNATION: X = CATEGORY

NRC REQUIREMENTS

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)

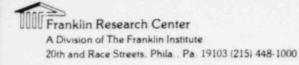
NRC QUALIFICATION CATEGORY

7

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	
.II.b	Equipment Not in the Scope of the Qualification Review	_X
VI	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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

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

Not stated, Not applicable

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LISTING OF APPLICABLE CHECKSHEETS:

Contents		kshe	et I	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	1b					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	3,6,	3,6		
System Consideration Review	4.	4%,	4%,	4元	44	4≴
Equipment Environmental Qualification Review			578, 54,		36,	5\$,
Installed TMI Lessons Learned Implementation Equipment Summary	Sa.	às.				
Maintenance and Replacement Schedule Summary	tar	75.	75			

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITE	1 NO. 123
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE A	PPLICABLE:
X The Licensee (has/has not) provid		
	ically stated that the equipment is en exposed to the applicable DBE	5
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equipeen fully established.	uipment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided tem.	by the
Corrective action specified b	by the Licensee:	
Equipment replacement wit	h qualified equipment	
Equipment relocation abov		
Relocate or shield equipm Verify qualification by a	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of Other (equipment in progress)
The Licensee has provided oth that can be construed as a ba operation.	er information for this equipment as for justification for interim	item
	ovided a schedule for the proposed for accomplishing the corrective)
The Licensee states that the equi and/ or should be exempted from en	pment item does not require qualif nvironmental qualification.	ication
DESIGNATION OF RESULTANT MRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
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 Availab	

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 NRC Contract No. NRC-03-79-118

 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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DESIGNATION: X = DEFICIENCY

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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)

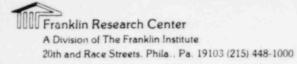
NRC QUALIFICATION CATEGORY

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.D	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 QUALIFIC TION REVIEW OF EQUIPMENT ITEM NO. 123

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

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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:

Contents

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Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

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3a, 3b, 3c, 3d-

42, 4b, 4c, 4d, 4e, 4E

5a, 5b, 5c, 5d, 5e, 51, 5g, 5h, 5i, 5j

6a, 60,

Za, 7b, 7c.

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EQUIPMENT ENVIRONMENTAL QUALIFIC	CATION REVIEW OF EQUIPMENT ITEN	NO. 124
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AF	PLICABLE:
X The Licensee (has/ has not) provid	ed a response to the SER concerns.	
The Licensee (has/has not) specif qualified and/or will function wh environmental service conditions.	ically stated that the equipment is en exposed to the applicable DBE	
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this equ been fully established.	ipment
Justification for interim ope Licensee for this equipment i	ration (has/has not) been provided tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit Equipment modification	h qualified equipment	
Equipment relocation abov		
	ent from radiation source dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of	equipment in progress	
Other ()
The Licensee has provided of that can be construed as a ba operation.	er information for this equipment i sis for justification for interim	tem
The Licensee (has/has not) pr corrective action. (Schedule action	ovided a schedule for the proposed for accomplishing the corrective	.)
The Licensee states that the equi and A should be exempted from en	pment item does not require qualifivironmental qualification.	cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON of this TER for Legend)	REVIEW
I.a Qualified	II.c Qualified Life Deficiency	
I.b Modification II.a Qualification Not Established	III.a Exempt (III.b) Not in Scope	
II.b Not Qualified	IV Documentation Not Availabl	Le

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

Documented Evidence of Qualification Alequate 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

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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.D	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

138

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1 4

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	- CIF	CLED	ITE	M(S)	ONL	. <u>Y</u> :
(See Section 3 of this TER for Legend)						
R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, (RPN) EX	N, SEN	4, Q1	, RI	PS, N	lone,	
Not stated, Not applicable						
LISTING OF APPLICABLE CHECKSHEETS:						
Contents	Che	cksh	eet 1	Page	No.	
Equipment Item	la					
Summary of Licensee Responses to the NRC SER	lb					
Equipment Environmental Qualification Summary Forms	2					
Licensee Response to NRC SER	3a,	36,	3%,	3		
System Consideration Review	474	4%	4	40.	\$a.	42
Equipment Environmental Qualification Review	34. 54.	96. 96.	\$\$. \$1.	54	3e.,	×
Installed TMI Lessons Learned Implementation Equipment Summary	8,a.,	ĝ¢.				
Maintenance and Replacement Schedule Summary	74	7,6,	×			

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-100

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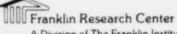
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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 459

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20th and Race Streets. P	hila Pa. 19103 (215) 448-1000	FRC Task No. 459		1.1
UIPMENT ENVIRO	NMENTAL QUALIFIC	CATION REVIEW OF EC	UIPMENT ITEM N	0. 12
UMMARY OF LICENSE	E RESPONSES TO THE	NRC SER - ONLY CHECKE	D ITEMS ARE APPL	CABLE
X The Licensee	has/ has not) provid	led a response to the	SER concerns.	
qualified and/	has/has not) specif or will function wh service conditions.	ically stated that th en exposed to the app	e equipment is licable DBE	
	as presented inform alification deficie	nation which shows the encies.	re are no	
The Licensee (item whose qua	has/has not) propos lification has not	ed a corrective actio been fully establishe	n for this equipm d.	ient
Justificat Licensee f	ion for interim ope or this equipment i	eration (has/has not) tem.	been provided by	the
Corrective	action specified b	by the Licensee:		
Equipm	ent modification	h qualified equipment		
Reloca	te or shield equipm	ve submergence level ment from radiation so additional (testing/an		
Equipm	ent relocation to a	mild environment		
Qualif Other		equipment in progress		_)
The Licens that can b operation.	e construed as a ba	er information for th sis for justification	is equipment item for interim	1
The Licens corrective action	ee (has/has not) pr action. (Schedule	ovided a schedule for for accomplishing th	the proposed e corrective .)	
X The Licensee s and/or should	tates that the equi be exempted from er	pment item does not r nvironmental qualifica	equire qualificat	ion
ESIGNATION OF RES CIRCLED ITEM ONI	ULTANT NRC QUALIFIC	CATION EVALUATION CATE of this TER for Legen	GORY BASED ON REV d)	/IEW
.a Qualified		II.c Qualified Li	fe Deficiency	
.b Modification		III.a Exempt		
I.a Qualification I.b Not Qualified		III.b Not in Scope IV Documentatio		
TTD HOC YUAITEIGO		iv Documentatio	n NOC AVAILABLE	



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20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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

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.D	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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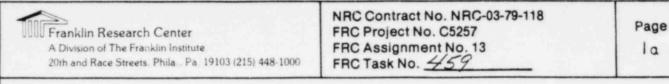
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

LICENSEE RESPONSE TO NRC SER



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 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]

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:

Contents	Chec	kshe	et E	Page	No.		
Equipment Item	la						
Summary of Licensee Responses to the NRC SER	lb						
Equipment Environmental Qualification Summary Forms	2						
Licensee Response to NRC SER	3a,	35,	36,	36			
System Consideration Review	44,	46,	46,	40,	48,	₫£	
Equipment Environmental Qualification Review		510, 514,		96, 95	56,	5€,	
Installed TMI Lessons Learned Implementation Equipment Summary	54,	96					
Maintenance and Replacement Schedule Summary	74,	76,	76				

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EQUIPMENT ENVIRONMENTAL QUALIFI	CATION REVIEW OF EQUIPMENT ITE	M NO. 12
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE A	PPLICABLE
,		
X The Licensee (has/has not) provid	ded a response to the SER concerns.	
	fically stated that the equipment i nen exposed to the applicable DBE	S
The Licensee has presented inform outstanding qualification deficie		
The Licensee (has/has not) propos item whose qualification has not	ed a corrective action for this eq been fully established.	uipment
Justification for interim ope Licensee for this equipment i	eration (has/has not) been provided tem.	by the
Corrective action specified b	y the Licensee:	
Equipment replacement wit	h qualified equipment	
Equipment modification Equipment relocation abov	e submergence level	
Relocate or shield equipm		
	dditional (testing/analysis)	
Equipment relocation to a		
Qualification testing of	equipment in progress	
Other ()
	er information for this equipment sis for justification for interim	item
corrective action. (Schedule	ovided a schedule for the proposed for accomplishing the corrective	
	and the second	/
X The Licensee states that the equip and/or should be exempted from env	pment item does not require qualif: vironmental qualification.	ication
ESIGNATION OF RESULTANT NRC QUALIFICA CIRCLED ITEM ONLY: (See Section 3 of		REVIEW
a Qualified		
.b Modification	II.c Qualified Life Deficiency	
La Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt [III.b Not in Scope]	

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. __________

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

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

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

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

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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 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]

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:

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FRC Task No. 459	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.
CHANNEY OF LIGENCER DECEMBER TO THE NEW OFF ONLY OURCERS THEN ARE ADDITION
SUMMARY OF LICENSEE RESPONSES TO THE NEC SER - ONLY CHECKED ITEMS ARE APPLICABL
X The Licensee (has/has not) provided a response to the SER (oncerns.
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)
X The Licensee states that the equipment item does not require qualification and A 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 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

NINC Contract No. NEG-03-79-118 FAC Project No. C5257 FRC Assignment No. 13 459 FRG Task No.

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DESIGNATION: X = DEFICIENCY

> DESIGNATION: X = CATEGORY

> > 3

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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/Preseate 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 (NURRG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Fending Modification	
II.a	Equipment Qualification Not Established	
II.b	Equipment Not Qualified	
II.c	Esuipment 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	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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LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

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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, 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:

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Licensee Response to NRC SER	3 a 2	3,26,	3×,	33		
System Consideration Review	44,	40,	<u>4</u> ¢,	to.	4.	*
Equipment Environmental Qualification Review	₩, ≫,	546, 514,	56, 54,	56, 35	5,8%,	5%,
Installed TMI Lessons Learned Implementation Equipment Summary	ô.a.,	56				
Maintenance and Replacement Schedule Summary	74,	75.	76			

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CATION REVIEW OF EQUIPMENT ITE
NRC SER - ONLY CHECKED ITEMS ARE A

- 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 'hich 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.

Page

EM NO. 128

APPLICABLE:

- _____ 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 License 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)

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I.a Qualified II.c Qualified Life Deficiency I.b Modification II.a Qualification Not Established II.b Not Qualified IV Documentation Not Available Franklin Research Center A Division of The Franklin Institute

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DESIGNATION: X = DEFICIENCY

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	NRC	REOUI	REMENTS
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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.D	Equipment Not in the Scope of the Qualification Review	$\underline{\times}$
VI	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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RC Assignment No. 13
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

LICENSEE RESPONSE TO NRC SER

Environmental Protection/Enclosures

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>459</u>

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:

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Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

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<u>59, 5h, 51, 5j</u>

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-72, 7b. 7c.

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EQUIPMENT ENVIRONMENTAL QUALIF	ICATION REVIEW OF EQUIPMENT ITEN	NO. 129
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE AN	PPLICABLE:
X The Licensee (has/has not) provi	ded a response to the SER concerns.	
	fically stated that the equipment is then exposed to the applicable DBE	
The Licensee has presented infor outstanding qualification defici		
The Licensee (has/has not) propo item whose qualification has not	sed a corrective action for this equipeen fully established.	ipment
Justification for interim op Licensee for this equipment	eration (has/has not) been provided item.	by the
Corrective action specified I	by the Licensee:	
Equipment replacement with Equipment modification		
Equipment relocation above Relocate or shield equipment		
Veri. / qualification by a	additional (testing/analysis)	
Equipment relocation to a		
Qualification testing of Other (equipment in progress)
The Licensee has provided oth that can be construed as a ba operation.	ner information for this equipment i asis for justification for interim	tem
	ovided a schedule for the proposed for accomplishing the corrective	•)
X The Licensee states that the equi and/ or should be exempted from en		cation
DESIGNATION OF RESULTANT NRC QUALIFIC - CIRCLED ITEM ONLY: (See Section 3		REVIEW
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	e

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. 129

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

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18

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
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
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
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
Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure: O Peak Temperature Adequate O Peak Pressure Adequate O Duration Adequate
Criteria Regarding Temperature/Pressure Exposure: o Peak Temperature Adequate o Peak Pressure Adequate o Duration Adequate
o Peak Temperature Adequate o Peak Pressure Adequate o Duration Adequate
o Peak Pressure Adequate
o Duration Adequate
o Duration Adequate
a Required Profile Enveloped Adequately
O REQUILED MILETOPED INSTANTO
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

(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

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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	
I.I.a	Equipment Exempt From Qualification	
III.D	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

TER-C5257-459

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.

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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

- W. G. Counsil Letter to D. M. Crutchfield, NRC. Subject: Environmental Qualification of Electrical Equipment, with attachments Northeast Nuclear Energy, 02-Jun-80
- 2. W. G. Counsil Letter to D. M. Crutchfield, NRC. Subject: Environmental Cualification of Electrical Equipment, with System Component Evaluation Worksheets Attached Northeast Nuclear Energy, 07-Jul-80 B10029
- R. W. Straub Letter to G. Black, GE. Subject: Emergency Core Cooling System Corner Room Heatup Test General Electric, 02-May-70 MS-2320
- N. R. Anderson Letter to D. L. Ziemann, NRC. Subject: Report of Visit to Millstone Unit 1 by NRC Personnel USNRC, 10-Feb-78
- 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
- W. G. Counsil Letter to D. M. Crutchfield, NRC. Subject: Containment Environmental Conditions, with Attachments Northeast Nuclear Energy, 01-May-80
- W. G. Counsil Letter to D. G. Eisenhut, NRC. Subject: Environmental Qualification of Electrical Equipment; with Attachment Northeast Nuclear Energy Co., 09-Oct-80 A01165
- W. G. Counsil 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

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- 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

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- 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
- 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

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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

- 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. Counsil Letter to D. G. Eisenbut, NRC. Subject: Environmental Qualification of Safety-Related Electrical Equipment Northeast Utilities, 30-Jan-81
- Office of Nuclear Reactor Kegulation 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. Counsil 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. Counsil 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. Counsil Letter to D. G. Eisenhut, NRC. Subject: Implementation of NUREG-0737, Post-TMI Requirements - Haddam Neck Plant, Millstone Nuclear Fower 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

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- 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
- Clarification of TMI Action Plan Requirements USNRC, 00-Nov-80 NUREG-0737
- 32. W. G. Counsil 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
- Environmental Qualification of Electrical Equipment USNRC, 14-Jan-80 IEB 79-01B
- 34. Environmental Qualification of Class lE Equipment USNRC, 29-Feb-80 IEB 79-01B, Supp. 1

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3.

- 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. Counsil 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. Counsil 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. Counsil Letter to D. G. Eisenhut, NRC. Subject: Millsto e Nuclear Power Station, Unit No. 1; Environmental Qualification of Electrical Equipment; with Attachment Northeast Utilities, 28-Apr-82 B10497

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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

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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 Drywell

Normal Operation

Temperature Pressure Humidity Radiation

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120°-170°F* (135°F Nominal+) 15.7 psia* 89°F dew point* 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 Pressure Radiation Humidity Flooded Level Spray

310°F, Figure A-22 43 psig, Figure A-5 Table A-1 100% 1'8" Elev. in drywell* Demineralized water*

Environment 2 - Reactor Building

Normal Operation

1

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14'6" Elevation

Temperature Pressure Humidity Radiation 104°F** -0.1 to -0.25 in H_2O^+ Not specified Table A-1

-2

42'6" Elevation

Temperature Pressure Humidity Radiation 104°F** -0.1 to -0.25 in H_2O^+ Not specified Table A-1

*Reference 8.

**8-5-80 Northeast Utilities Letter NEE-80-L-345.

+FSAR.

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65'9" Elevation

Temperature Pressure Humidity Radiation 104°F** -0.1 to -0.25 in H₂O+ Not specified Table A-1

Corner Rooms

Temperature
Pressure
Humidity
Radiation

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90°F++/104°F** Not specified Not specified Table A-1

Accident Conditions

14'6" Elevation (MSLB)

Temperature Pressure Humidity Radiation Flooded Level Figure A-7 Figure A-8 100% (assumed) Table A-1 Not specified

42'6" Elevation (ICWLB)

Temperature Pressure Humidity Radiation Flocded Level Figure A-9 Figure A-10 Figure A-20 Table A-1 Not specified

65'9" Elevation (ICSLB)

Temperature Pressure Humidity Radiation Flooded Level Figure A-11 Figure A-12 Not specified Table A-1 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.

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Corner Rooms

Temperature Pressure Humidity Radiation Flcoded Level

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202°F 14.75 psia 100% Table A-1 Not specified

Environment 3 - Steam Tunnel

Normal Operation

Open Areas

Temperature Pressure Humidity Radiation

Accident Conditions (MSLB)

Temperature Pressure Humidity Radiation Flooded Level

Environment 4 - Turbine Building

Normal Operation

Temperature

Pressure Humidity Radiation

Accident Conditions

Temperature

Pressure

Humidity Radiation Flooded Level 120°F Not specified Not specified Table A-1

Figure A-17 Figure A-18 Figure A-19 Table A-1 Not specified

105°F Condensate Pump Area** 120°F Feedpump Area -0.1 inches H₂O+ Not specified Table A-1

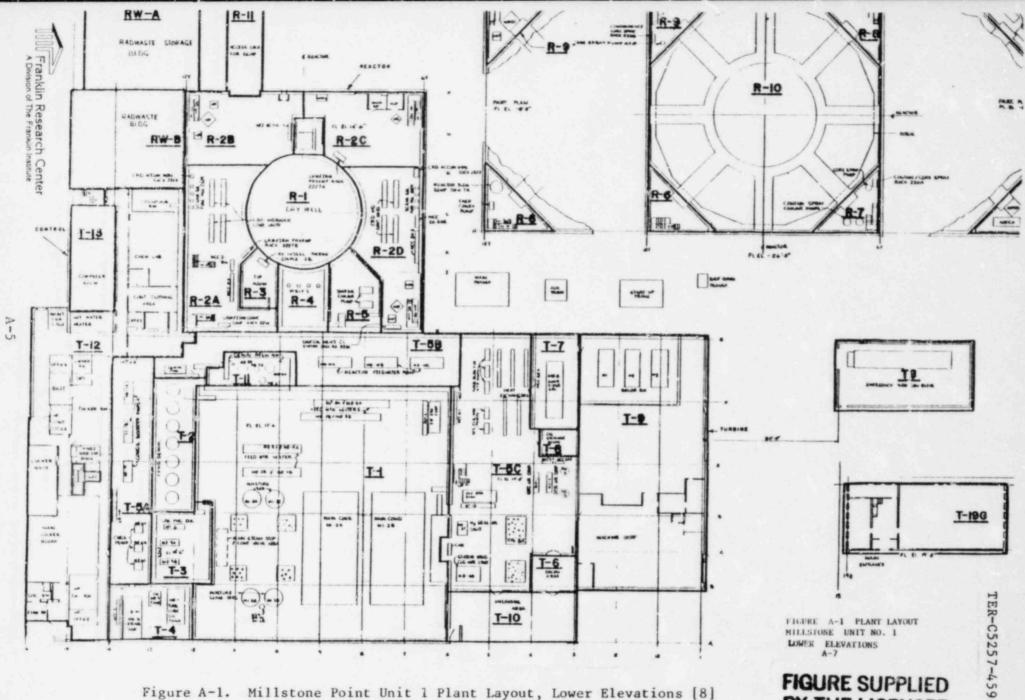
Condenser Bay: Figure A-13 Switchgear Area: Figure A-15 Condenser Bay: Figure A-14 Switchgear Area: Figure A-16 100% RH (assumed) Table A-1 Not specified

**8-5-80 Northeast Utilities Letter NEE-80-L-345.

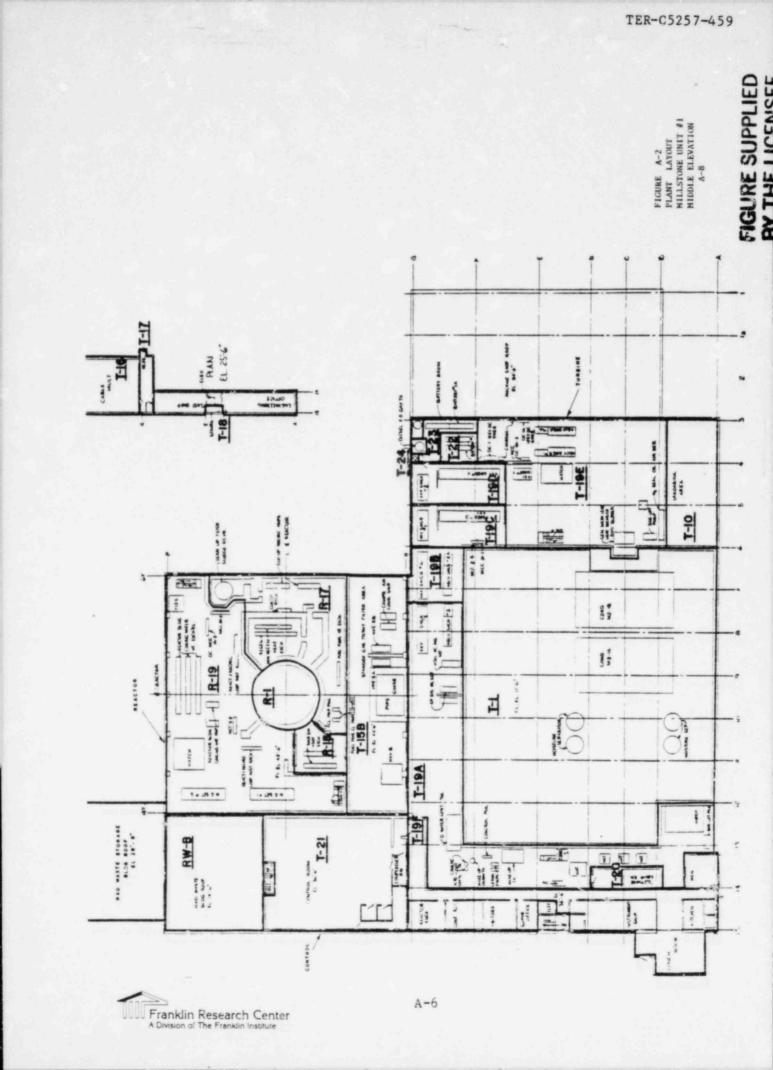
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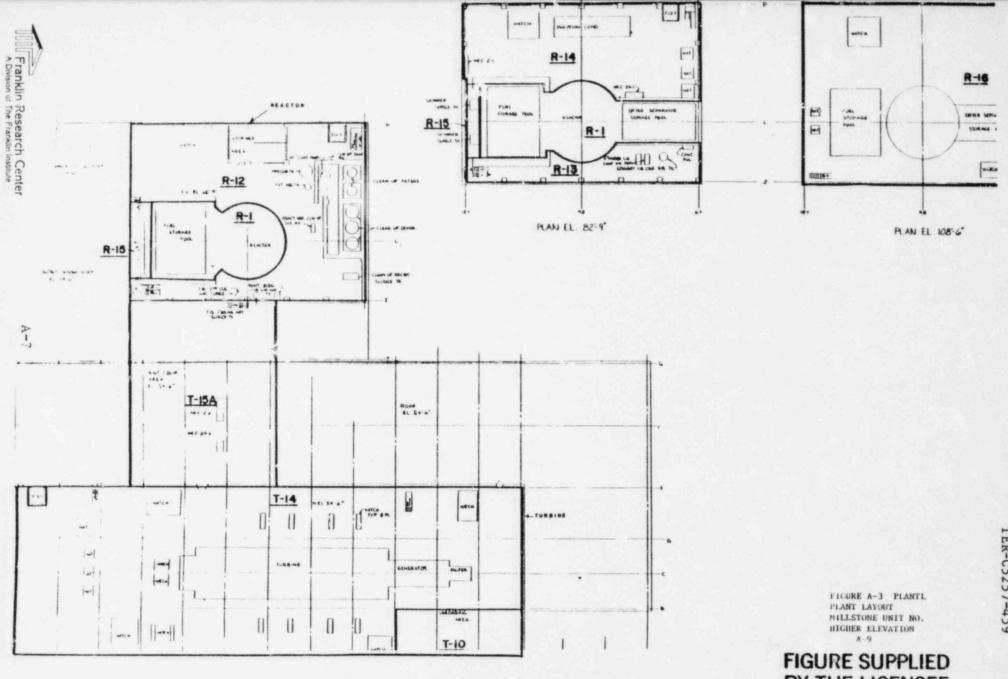
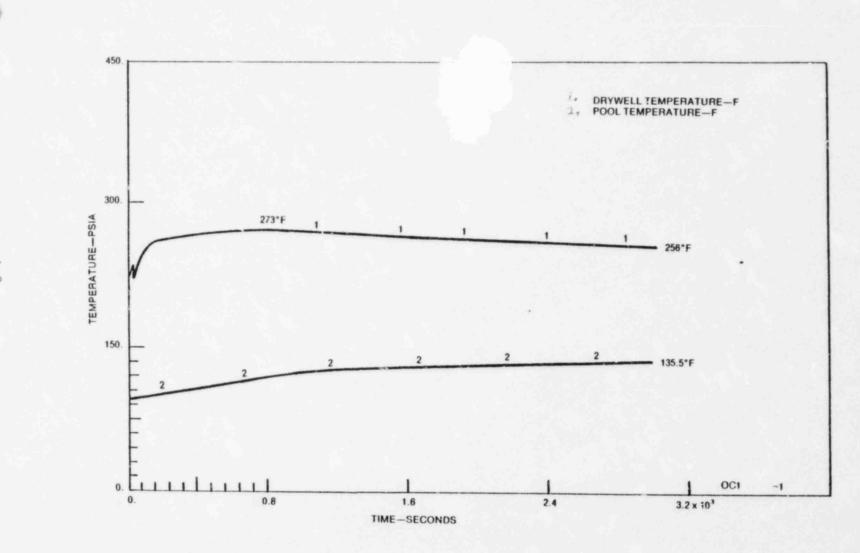
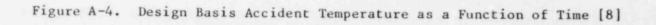


Figure A-3. Millstone Point Unit 1 Plant Layout, Higher Elevation [FSAR]

BY THE LICENSEE

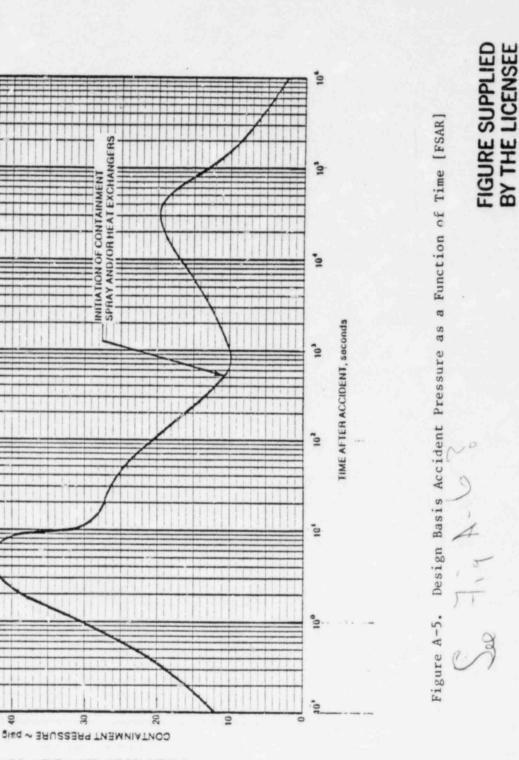


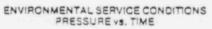


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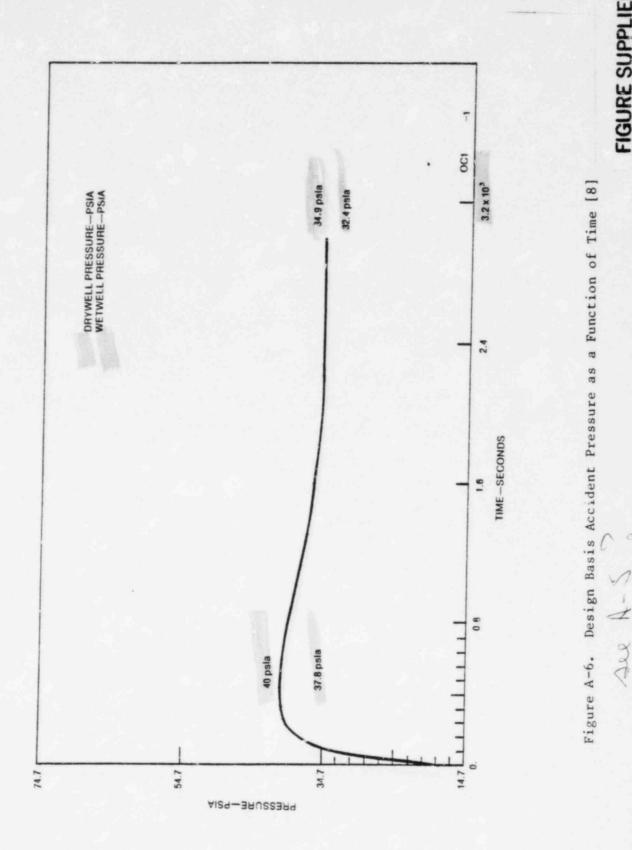




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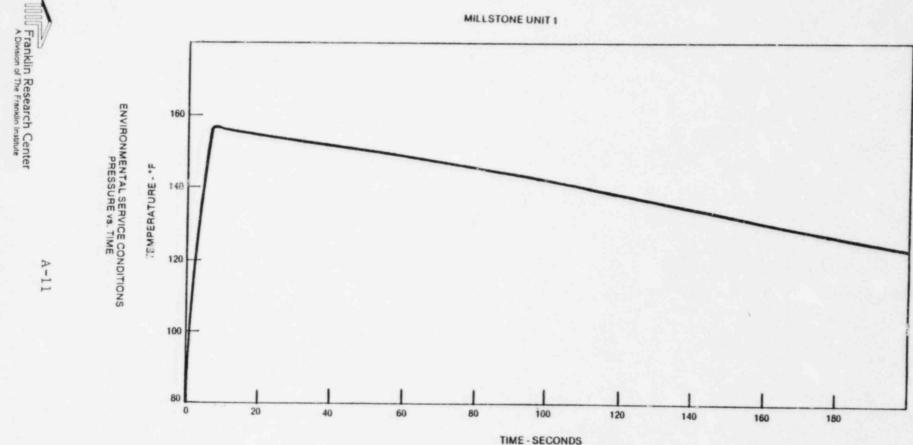
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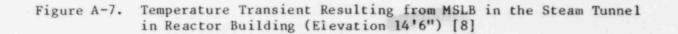
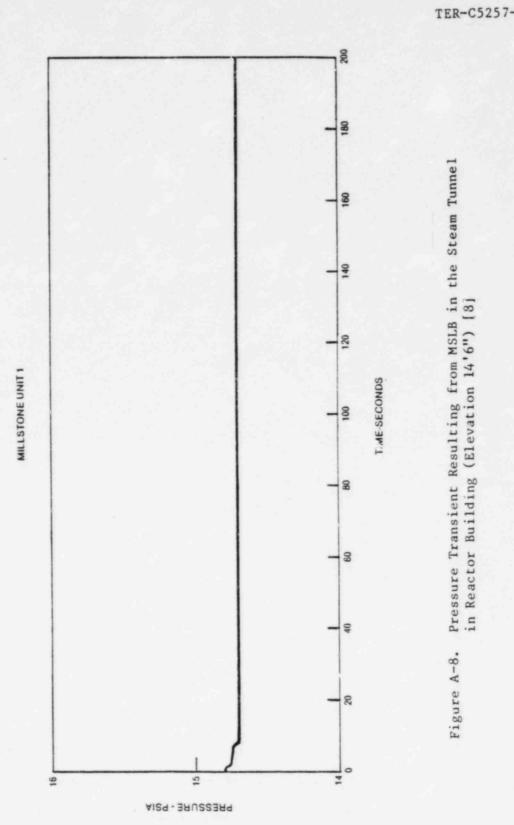
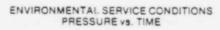


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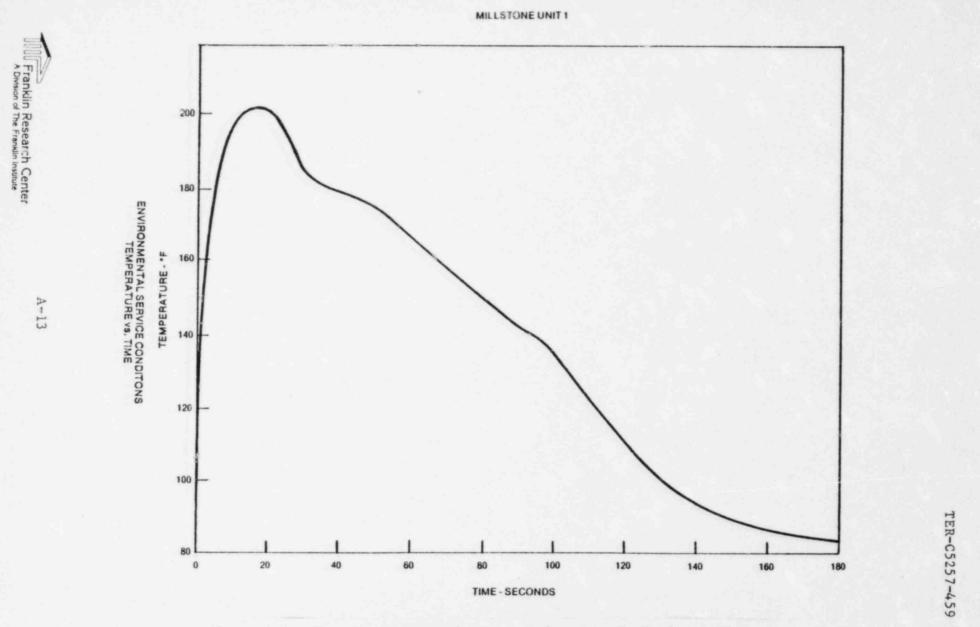


Figure A-9. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 42'6") [8]

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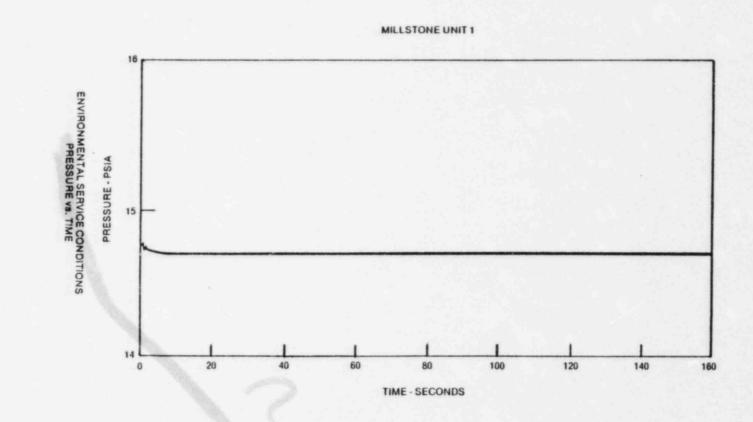


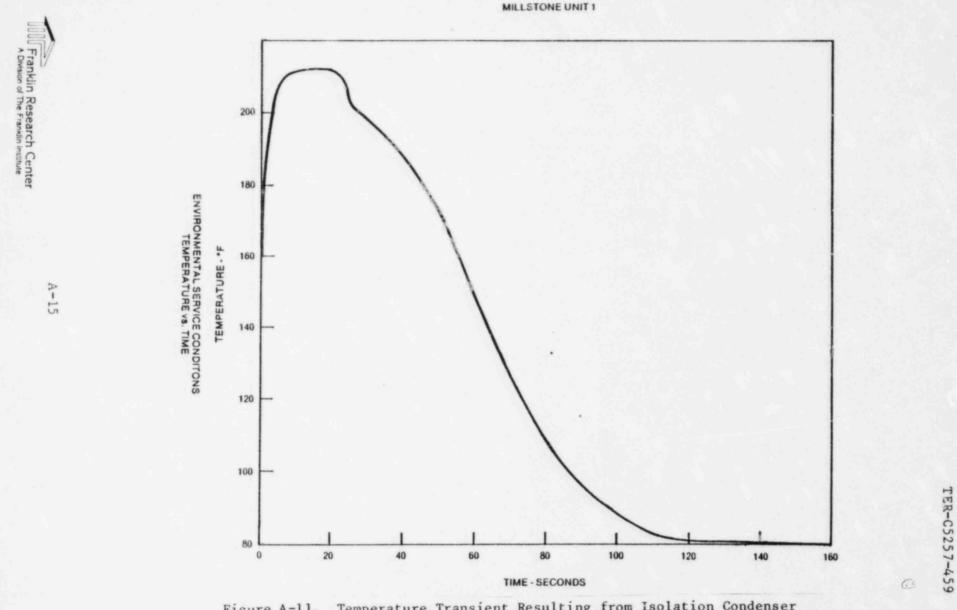
Figure A-10. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 42'6") [8]

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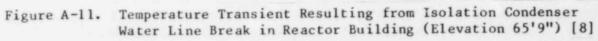


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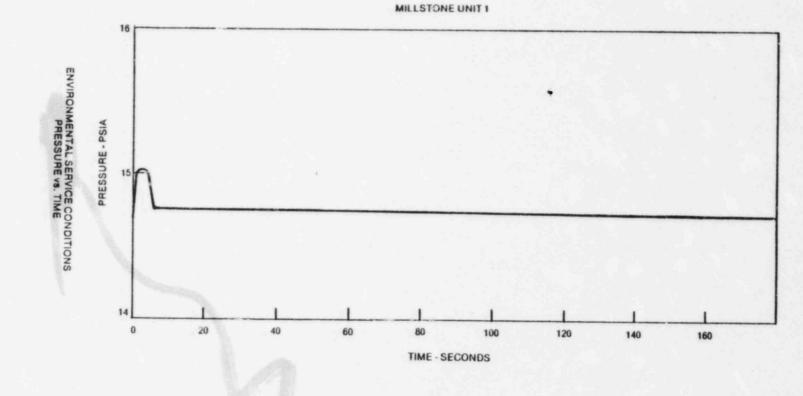
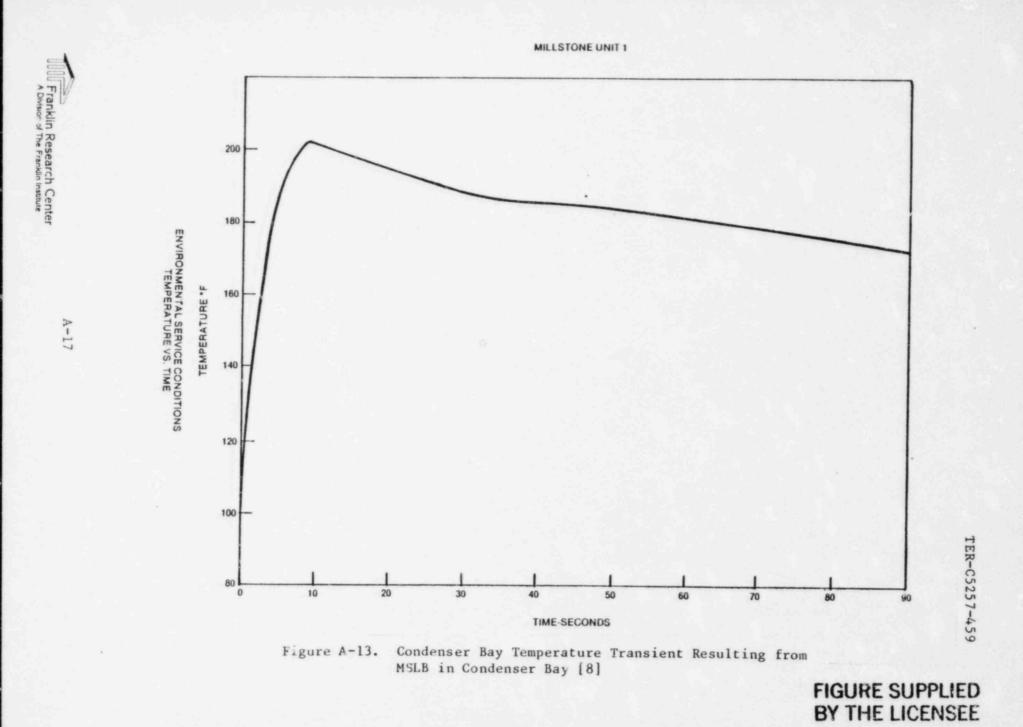


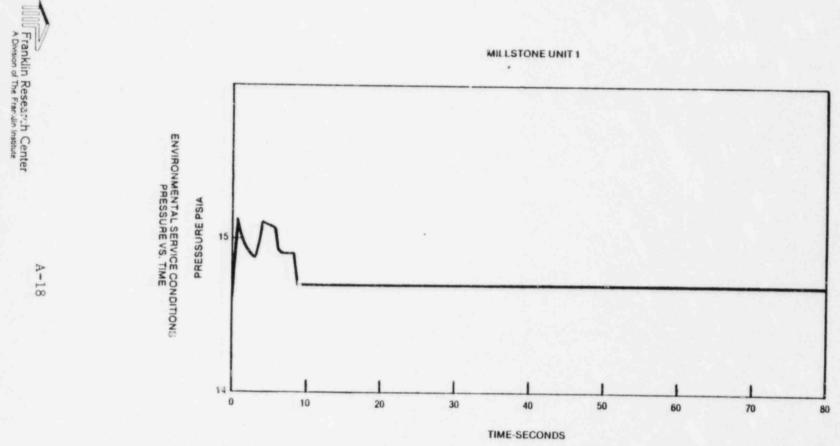
Figure A-12. Temperature Transient Resulting from Isolation Condenser Water Line Break in Reactor Building (Elevation 65'9") [8]

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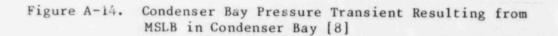
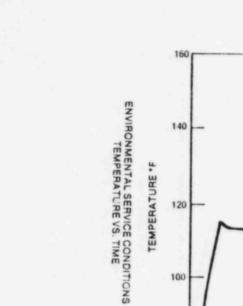


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MILLSTONE UNIT 1

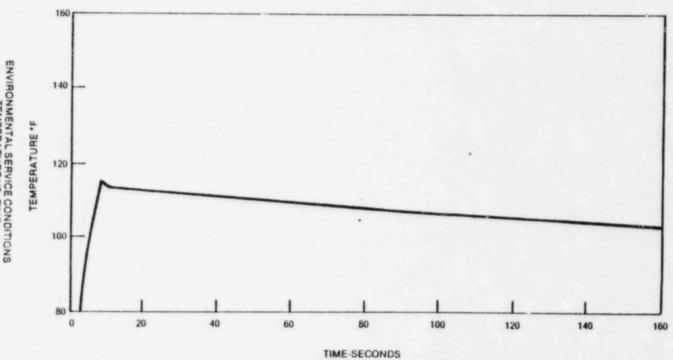


Figure A-15. Switchgear Room Temperature Transient Resulting from MSLB in Condenser Bay [8]

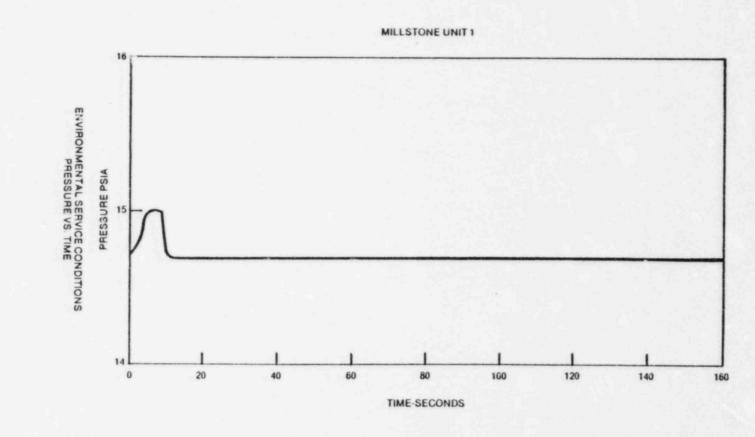
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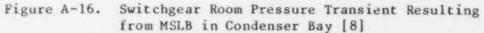
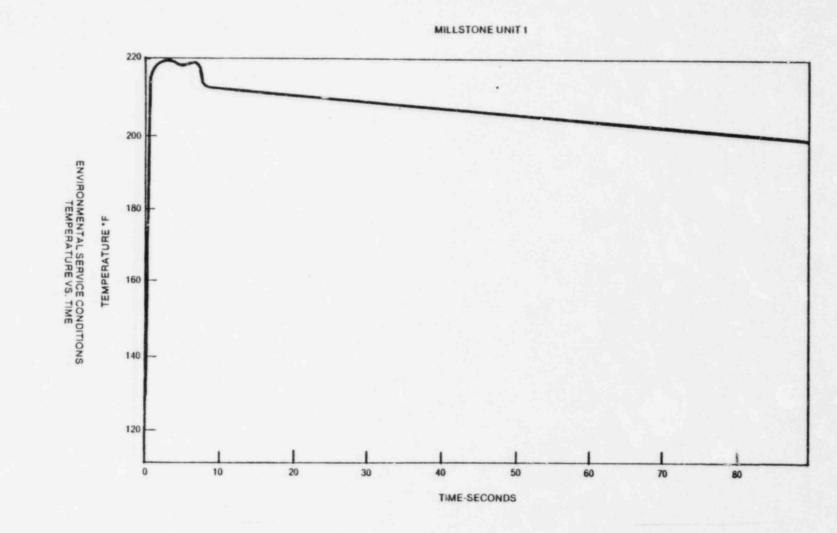


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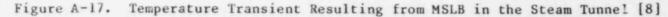


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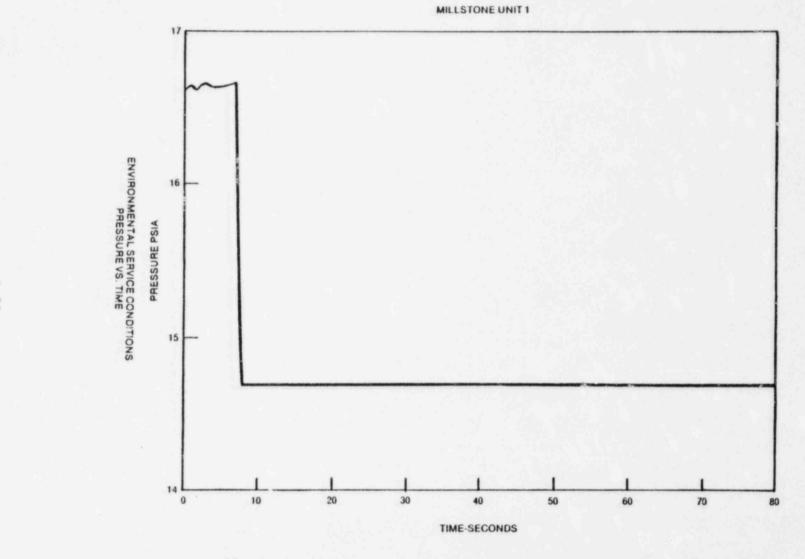


Figure A-18. Pressure Transient Resulting from MSLB in the Steam Tunnel [8]

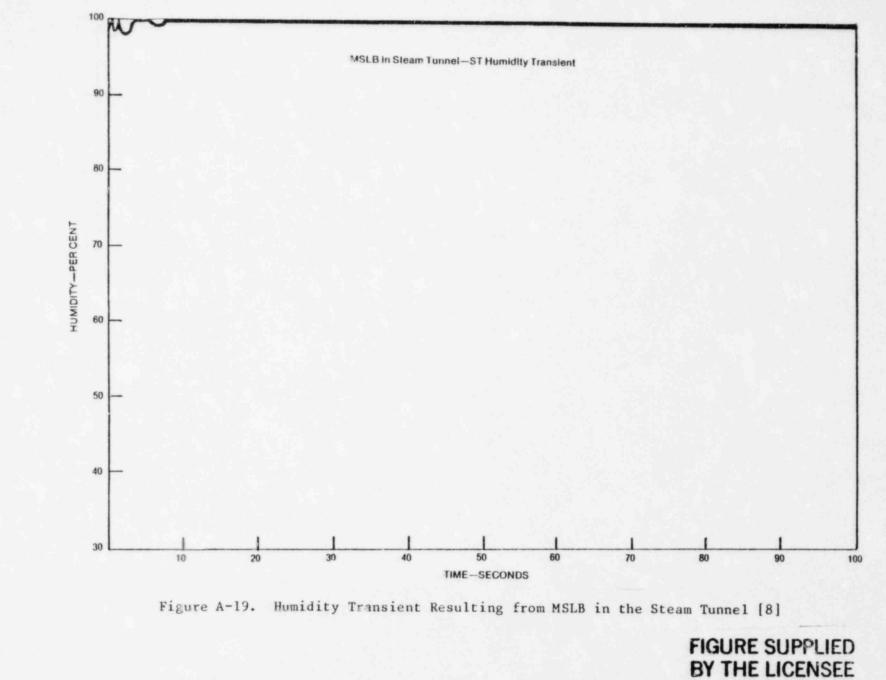
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FIGURE SUPPLIED BY THE LICENSEE 1

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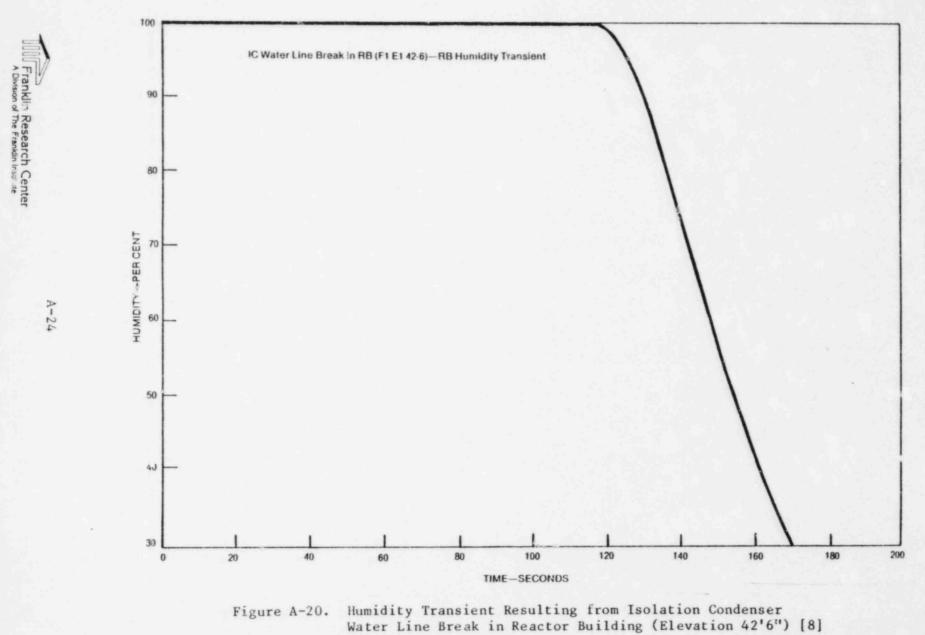
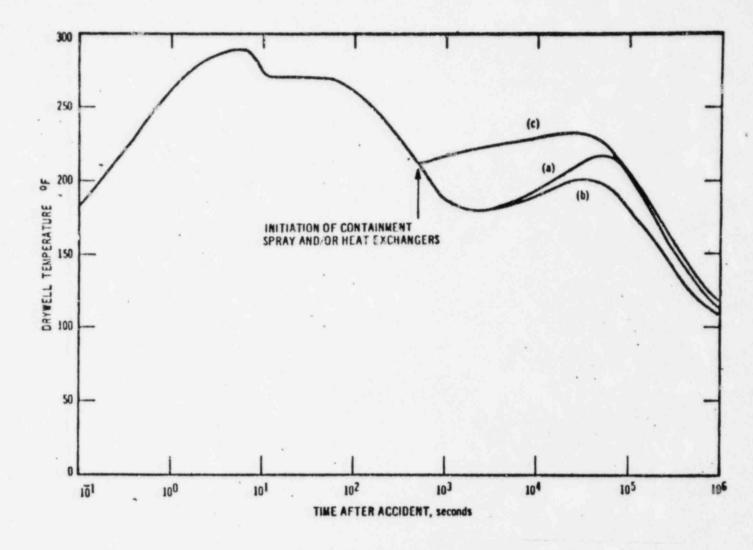


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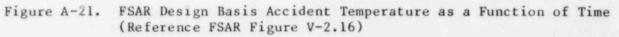


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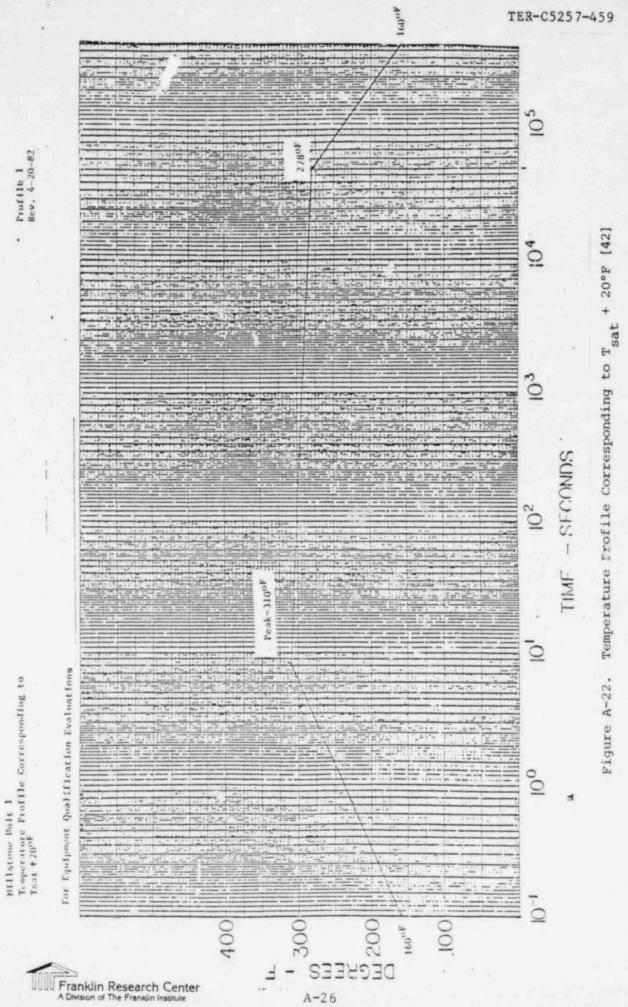


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Table A-1

	40 Year ¹ Dose (Rads)	Post-Accident Doses ² (Rads)								
Receptor Point Location		1 Hour		24 Hours		720 Hours		6 Months		
		Y(Gamma)	3(deta)	_X_	B		<u>B</u>			
Drywell	3.82+6	7.18+6	5.12+7	3.9E+7	3.72+8	8.8E+7	1.3E+9	9.0E+7	1.5E+9	
Reactor Building										
1) Generic ³	1.3E+6	3.12+4	-	2E+5	-	5.3E+5		7.92+5	-	
2) Steam ⁴ Tunnel	1.1E+6	1.8E+6	2.5E+7	-	-	- 1	- '	-	•	
3) TIP Room	7.02+5	1.68+5	-	9.28+5	-	2.18+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	-	9.98+3	-	1.02+4	-	
3) SGTS Room	7.02+5	8.92+5	-	4.0E+7	-	2.8E+9		3.76-9	÷.,	
 Turbine Ground Floor 	2.8E+4			-	-	÷	-	-	-	
5) TBCCW, TBSCCW, Machine Shop, Boiler Room	1.12+4		-	1						
6) Condenser ⁶ Bay, 14.6 Elev.	3.58+5	2.98+5	1.4E+6	1.62+6	9.82+5	3.6E+6	3.2E+7	3.7E+6	3.6E+7	
7) Condenser ⁶ Bay Floor	1.82+6	2.98+5	1.45+6	1.62+6	9.82+6	3.6E+6	3.2E+7	3.7E+6	3.68+7	
Control Room	3.5E+1	<1	-	<1	-	<1		1.0E+0	-	
Intake Structure & Gas Turbine Bldg.	1.82+2	-	- 1	-	-	-	-	4		

RADIATION SERVICE CONDITIONS*

Notest

1. 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 intially 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 svailable cooling water.
- 3. Generic LOCA dose in the reactor building was taken in the corner room in the general vicinity of the LPCT 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 gar and halogens assumed to be released during break.

5. 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

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Table A-1 (Cont.)

and the second second		Total Dose ¹ (Rads)									
Receptor Point	and the second sec	1 Hour		24 Hours		720 Hours		6 Months			
Location	Y+a	B(Seta)	<u>1+a</u>	<u>B</u>	_ <u></u>	<u>B</u>	_1+n	8			
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 ²	1.35+6	-	1.5E+6	-	1.8E+6	-	2.1E+6				
2) Steam Tunnel	2.98+6	2.5E+7	-	-	-	-	-	-			
3) TIP Room	8.68+5	-	1.6E+6	-	2.8E+6	-	3.1E+6	-			
Turbine Building	3										
1) 2 M Level	8.8E+2	-	8.8E+2		8.8E+2	-	8.8E+2	-			
2) Switchgear A	zea 3.58+5	-	3.5E+5	-	3.6E+5	-	3.6E+5				
3) SGTS Room	1.62+5	-	4.1E+7	- '	2.88+9	-	3.72+9	-			
4) Turbine Grou Floor	nd 2.85+4		2.8E+4		2.8E+4	-	2.8E+4	-			
5) TBCCW, TBSCC Machine Shop Boiler Room		1	1.18+4		1.1E+4		1.1E+4	-			
6) Condenser Ba 14.6 Elev.	6.42+5	1.4E+6	2.0E+6	9.83+6	4.0E+6	3.2E+7	4.12+6	3.6E+7			
7) Condenser Ba Floor	7 2.1E+6	1.4E+6	3.4E+6	9.8E+6	5.48+6	3.2E+7	5.5E+6	3.6E+7			
Control Room	3.5E+1	in in	3.5E+1	-	3.5E+1	-	3.6E+1	•			
Intake Structure & Gas Turbine BL		-	1.82+2		1.85+2		1.8E+2	÷.,			

Notes:

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1. 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.

3. 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 (14.5' 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 Trensmitter, 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.

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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]

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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-25 [22]

Equipment Item No. 7 Solenoid Valve Located in the Drywell ASCO Model LBX8320 Actuates Main Steam Isolation Valves (IMS-IA, 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: Fages 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 (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]



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 I⁺em 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 SBGT 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 Referenc 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]

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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 Limitorque 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 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]

Equipment Item No. 26 Motorized Valve Actuator Located in the Steam Tunnel Limitorque 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 Limitorque 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 Limitorque 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]

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Equipment Item No. 29 Motorized Valve Actuator Located in the Reactor Building Limitorque 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 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]

Equipment Item No. 31 Motorized Valve Actuator Located in the Drywell Limitorque 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 Mocorized 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]

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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]

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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
Ba.ton 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 372-65849A-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]

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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 Eeference 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]

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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 Dryweil 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]

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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 -95 [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] B-27

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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]

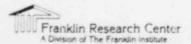


Equipment Item No. 110 Electric Motor Located in the Intake Structure General Electric Model 5K6338XC39A Drives Service Water Pumps (M4-7C, D) Licensee reference not cited Required Operating Time: Continuous TER Checksheet No. 110 Reference 19, Section 4.7.12 Licensee Submittal: Page VI-5 [27]

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 3K447XAM206 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 XT2-3 [27]

Equipment Item No. 121 Transformer Located in the Turbine Building-General Electric, 1500/2000 kVA 4160/480 V Auxiliary Transformer Licensee reference not cized Required Operating Time: Contingous TER Checksheet No. 121 Reference 19, Section 4.3.2.1 Licensee Submittal: Page XIII-1 [27]

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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]

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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

	Parameter	SCEWS
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.

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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

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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:

 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

* 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. Counsil (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:

Equipment Item	Equipment Description/ Function	SCEW Sheet No.	Status Code	Basis for Deficiency
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

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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.l.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. (1)**

By letter dated October 20, 1981 [6], the Licensee advised NRC that a particular cable was not qualified.⁽²⁾

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(1)

By letter dated April 28, 1981 [7], the Licensee submitted a revised temperature profile for LOCA in containment and SCEW sheets for affected equipment.⁽³⁾

*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 DATE RECEIVED BY FRC*** INFORMATION REQUESTED 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: 2/17/82 [5](1) a. Wyle NEQ Report 17436-31, 1/12/81 Licensee Ref. Q-41 [2] 2/17/82 [5](1) b. Wyle NEQ Report 17436-32, 1/13/81 Licensee Ref. Q-30 [2] 2/17/82 [5](1) c. Wyle NEQ Report 17436-21, 2/10/81 Licensee Ref. Q-31 [2] 2/17/82 [5](1) d. Wyle NEQ Report 17436-78, 4/7/81 Licensee Ref. Q-32 [2] 2/17/82 [5](1) e. Wyle NEQ Report 17436-75, 3/24/81 Licensee Ref. Q-33 [2] 2/17/82 [5](1) f. Wyle NEQ Report 17436-65, 3/3/81 Licensee Ref. Q-34 [2] 2/17/82 [5](1) g. Wyle NEQ Report 17436-28, 2/18/81 Licensee Ref. Q-35 [2] 2/17/82 [5](1) h. Wyle NEQ Report 17436-77, 3/25/81 Licensee Ref. Q-36 [2] 2/17/82 [5](1) i. Wyle NEQ Report 17436-23, 2/6/81 Licensee Ref. Q-46 [2] 2/17/82 [5](1) j. Wyle NEQ Report 17436-76, 3/24/81 Licensee Ref. Q-37 [2] k. Wyle NEQ Report 17436-68, 3/11/81 2/17/82 [5](1) Licensee Ref. Q-40 [2]

***This column will be completed by FRC as the requested information is received.

2/17/82 [5](1)

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2/17/82 [5](1)

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2/17/82 [5](1)

DATE RECEIVED BY FRC***

- Wyle NEQ Report 17436-74, 3/23/81 Licensee Ref. Q-40 [2]
- m. Wyle NEQ Report 17436-39, 4/10/81 Licensee Ref. Q-38 [2]
- n. Wyle NEQ Report 17436-6,9 3/12/81 Licensee Ref. Q-39 [2]
- o. Limitorque Test Report 600376A, Rev-B, <u>2/17/82 [5]</u>(1) 1/23/79 Licensee Ref. Q-49 [2]
- p. Wyle NEQ Report 17436-36, 2/2/81 Licensee Ref. Q-44 [2]
- q. Wyle NEQ Report 17436-15, 12/1/80 Licensee Ref. Q-42 [2]
- r. Wyle NEQ Report 17436-48, 2/3/81 Licensee Ref. Q-48 [2]
- s. Wyle NEQ Report 17436-15, 12/1/80 Licensee Ref. Q-43 [2]
- t. Wyle NEQ Report 17436-20, 11/25/80 Licensee Ref. Q-52 [2]
- u. Wyle NEQ Report 17436-19, 11/25/80 Licensee Ref. Q-51 [2]
- v. GE Topical Report No. 491HA751, 9/15/79, for vertical induction motors, Add. A Licensee Ref. Q-18 [2]
- w. GE Test Report, Pump Motor Model No. 5K818841A134 SCEWS VI-4 [2]
- x. Wyle NEQ Report 17436-35, 1/23/81 Licensee Ref. Q-47 [2]

2/17/82 [5](1)

B. FRC REVIEW OF INSTALLED TMI ACTION PLAN ITEMS

INFORMATION REQUESTED

- Reference 2 does provide adequate detail with respect to identification of TMI Action Plan equipment installed as of 1/1/81.
 - a. Identification of all TMI Action Plan equipment installed as of 1/1/81 is requested.
 - b. Identification of TMI Action Plan equipment installed with implementation dates after 1/1/81 is requested.
 - 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.

- d. For all installed TMI Action Plan equipment identified, a System Component Evaluation Worksheet (SCEW) (in accordance with 79-01B format) is requested.
- 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.]
 - Babcock & Wilcox test report on Endevco and Unholtz-Dickie 2273 AM20 Accelerometer (as soon as received) SCEWS XV-15 [2]

DATE RECEIVED BY FRC***

9/20/81 2

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2/17/82 [5](1)

2/17/82 [5](1)

DATE RECEIVED BY FRC***

- b. Babcock & Wilcox test report on Endevco 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 h.gh range radiation monitor Licensee Ref. Q-53
- e. Rockbestos "Qualification of Firewall III" coax construction cable dated Jan. 18, 1978 (Proprietary) Licensee Ref. Q-54 [2].
- 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
- 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

 copy of cover letter to NRC project manager and complete package to FRC.

REFERENCES

- W. G. Counsil (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. Counsil (NNECO) Letter to D. G. Eisenhut (NRC) Subject: Licensee 90-day Response to NRC Safety Evaluation Report Northeast Nuclear Energy Company, 14-Sep-81
- Office of Nuclear Reactor Regulation and Safety Evaluation Report for Millstone Unit 1; Environmental Qualification of Safety-Related Electrical Equipment USNRC, 10-June-81

- NUREG-0737, "Clarification of TMI Action Plan Requirements" NRC, November 1980
- 5. W. G. Counsil 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(1)
- 6. W. C. Counsil 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(2)

7. W. G. Counsil Letter to D. G. Eisenhut, NRC. Subject: Millstone Nuclear Power Station, Unit No. 1; Environmental Qualification of Electrical Equipment; with Attachement Northeast Utilities, 28-Apr-82 B10497(3)