

ENVIRONMENTAL QUALIFICATION PROGRAM MANUAL  
FOR THE TROJAN NUCLEAR PLANT

PGE-1025

The following information and checklist are furnished as a guide for the insertion of new sheets for Amendment 5 into the Environmental Qualification Program Manual for the Trojan Nuclear Plant. This material is denoted by use of the amendment number and date in the lower outside corner of the page.

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## 2.0 REGULATORY CRITERIA FOR ENVIRONMENTAL QUALIFICATION

This Chapter summarizes the regulatory criteria, guidelines and standards used in the environmental qualification review of electric equipment important to safety in the Trojan Nuclear Plant.

### 2.1 REGULATORY CRITERIA DEVELOPMENT

The Nuclear Regulatory Commission (NRC) has established criteria for environmental qualification of safety-related electrical equipment in nuclear power plants. General Design Criterion 4 of Appendix A to 10 CFR 50 establishes the general requirement for environmental qualification of safety-related equipment. It 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". The Trojan Nuclear Plant was originally designed to meet General Design Criterion 4; however, the NRC later developed specific guidelines and requirements to implement this general requirement for operating reactors.

Institute of Electrical and Electronic Engineers (IEEE) 323-1974, "IEEE Standards for Qualifying Class 1E Equipment for Nuclear Power Generating Stations", is the current industry standard for environmental qualification of safety-related electrical equipment. This standard was first issued as a trial-use standard, IEEE 323-1971. After substantial revision, the current version was issued in 1974. Both versions of this standard set forth generic requirements for equipment qualification, but the 1974 standard includes specific requirements for aging, margins, and maintaining documentation records that were not included in the 1971 trial-use standard. The 1974 standard was endorsed by the NRC in Regulatory Guide 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants", for newer plants, ie, existing construction permit applicants. However, no Regulatory Guide was ever issued adopting the 1971 IEEE 323 standard.

Design of the Trojan Nuclear Plant was initiated well before the issuance of IEEE 323-1971. Nevertheless, PGE made a commitment to the Westinghouse qualification program, which used IEEE 323-1971 as a design standard for many important Nuclear Steam Supply System components, especially those inside the Containment Building where the most severe post-accident environmental conditions were postulated. Applicable provisions of IEEE 323-1971 were also factored into the design of balance-of-Plant equipment outside Containment where appropriate.

In 1978, the NRC issued IE Circular 78-08 requesting licensees to examine installed safety-related electrical equipment and ensure appropriate documentation of its qualification to function under accident conditions. The following year, IE Bulletin 79-01 was issued requiring licensees to provide written evidence of electrical equipment qualification. Although these documents requested qualification reviews and information, neither provided specific guidelines for conducting detailed qualification reviews.

Subsequently, in late 1979 the NRC staff developed definitive criteria for reviewing the environmental qualification of safety-related electrical equipment. The Division of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors" (DOR Guidelines) were developed specifically for operating reactors. In addition, for reactors under licensing review, the NRC issued NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment".

The intent of the DOR Guidelines is not to provide guidelines for implementing either version of IEEE 323 for operating reactors. The intent is rather to provide a basis for judgments required to confirm that operating reactors are in compliance with General Design Criterion 4. The intent of NUREG-0588 is to implement IEEE 323 for plants under licensing review. It provides a number of NRC staff positions on selected areas of the qualification issue. These positions are divided into two categories:

- (1) Category I positions apply to equipment qualified in accordance with IEEE 323-1974.
- (2) Category II positions apply to equipment qualified in accordance with IEEE 323-1971.

After the NRC staff completed their initial review of licensees' responses to IE Bulletin 79-01, IE Bulletin 79-01B was issued in January 1980 requiring additional qualification information in a specified format for electrical equipment evaluated against the DOR Guidelines. NUREG-0588 was also referenced as a source of supplemental information to be used with the DOR Guidelines.

On May 23, 1980 the NRC Commissioners issued a Memorandum and Order (CLI-80-21). In this Order, the Commission endorsed the NRC staff's use of the DOR Guidelines to review operating plants and NUREG-0588 to review plants under licensing review as well as those pieces of equipment in operating plants which do not meet the DOR Guidelines. The Commission directed the staff to complete its review of environmental qualification, including publication of Safety Evaluation Reports (SER), by February 1, 1981, and ordered that all safety-related electrical equipment in all operating plants be qualified to the DOR Guidelines or NUREG-0588 by no later than June 30, 1982.

In order to implement the provisions of the Commission's Memorandum and Order, the NRC issued two separate Orders to licensees. An Order in August 1980, subsequently amended in September, required submittal of a complete response to IE Bulletin 79-01B by November 1, 1980. An Order in October 1980 amended the operating license of Trojan and other operating plants to require: (a) qualification of all safety-related equipment by June 30, 1982 in accordance with the DOR Guidelines or NUREG-0588, and (b) establishment of a central documentation file for environmental qualification by November 1, 1980. These requirements are documented in Trojan Technical Specification 6.13, "Environmental Qualification."

(5)

On June 25, 1982 the Commission promulgated an interim rule as 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants". This rule suspended the June 30, 1982 deadline for completion of environmental qualification of safety-related electrical equipment pending publication of a final rule on qualification of such equipment.

On January 21, 1983 the Commission promulgated a final rule on environmental qualification of electric equipment important to safety. This rule superseded the June 25, 1982 interim rule and was intended to codify the methods and criteria that meet NRC requirements in the area of environmental qualification.

(2)

In June 1984, the NRC issued Revision 1 to Regulatory Guide 1.89. Revision 1 to Regulatory Guide 1.89 describes a method acceptable to the NRC staff for complying with 10 CFR 50.49. The Regulatory Guide generally endorses IEEE 323-1974, subject to certain clarifications and conditions.

## 2.2 REGULATORY BASIS FOR ENVIRONMENTAL QUALIFICATION REVIEW

(5)

The review described in this report was originally conducted in accordance with the DOR Guidelines. NUREG-0588 was used as supplemental guidance. This approach was consistent with the Commission's Memorandum and Order (CLI-80-21) as implemented by Trojan Technical Specification 6.13. This report has since been amended to address the requirements of 10 CFR 50.49, the guidelines of Regulatory Guide 1.89 (Revision 1), and Generic Letter 88-07, "Modified Enforcement Policy Relating to 10 CFR 50.49, Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants".

The DOR Guidelines, NUREG-0588, 10 CFR 50.49, and Regulatory Guide 1.89 (Revision 1) have been implemented in accordance with the following:

- (1) Equipment ordered prior to February 22, 1983 (the effective date of 10 CFR 50.49) is qualified in accordance with the DOR Guidelines or NUREG-0588 (Category I).
- (2) Equipment ordered after February 22, 1983, but before June 1, 1984 (the effective issue date of Revision 1 to Regulatory Guide 1.89), is qualified in accordance with NUREG-0588 (Category I), unless the provisions of Item 4 below are applicable. Qualification in accordance with NUREG-0588 (Category I) is construed to be equivalent to meeting the provisions of 10 CFR 50.49.
- (3) Equipment ordered after June 1, 1984 will be qualified in accordance with 10 CFR 50.49, unless the provisions of Item 4 below are applicable. The provisions of Revision 1 to Regulatory Guide 1.89 will be complied with in the qualification review of this equipment, except as noted in this topical report.
- (4) Replacement equipment ordered after February 22, 1983 must be qualified in accordance with the provisions of Items 2 and 3 above, unless there are sound reasons to the contrary. The following are considered to be sound reasons for the use of replacement equipment previously qualified in accordance with the DOR Guidelines or NUREG-0588 in lieu of upgrading:
- (a) The item of equipment to be replaced is a component of equipment that is routinely replaced as part of normal equipment maintenance, eg, gaskets, O-rings, and coils; these may be replaced with identical components.
  - (b) The item to be replaced is a component that is part of an item of equipment qualified as an assembly; these may be replaced with identical components.

(2)

- (c) Replacement equipment qualified in accordance with the provisions of 10 CFR 50.49 does not exist.
- (d) Replacement equipment qualified in accordance with the provisions of 10 CFR 50.49 is not available to meet installation and operation schedules. However, in such case, the replacement equipment may be used only until upgraded equipment can be obtained and an outage of sufficient duration is available for replacement.
- (e) Replacement equipment qualified in accordance with 10 CFR 50.49 would require significant plant modifications to accommodate its use.
- (f) The use of replacement equipment qualified in accordance with 10 CFR 50.49 has a significant probability of creating human factor problems that would negatively affect plant safety and performance, for example:
  - 1) Knowledge, skills, and ability of existing plant staff would require significant upgrading to operate or maintain the specific replacement equipment;
  - 2) The use of the replacement equipment would create a one-of-a-kind application; or
  - 3) Maintenance, surveillance, or calibration activities would be unnecessarily complex.

For replacement equipment qualified in accordance with Paragraphs (c) through (f) of this item, a nonconformance report shall be processed as described in Section 5.1.2.3.



The provisions of Generic Letter 88-07 are also followed in the environmental qualification program. If a potential deficiency is identified in the environmental qualification of a component, Generic Letter 88-07 provides the following guidelines on appropriate actions to be taken:

- (1) A prompt determination of operability shall be made for the affected equipment.
- (2) Immediate steps shall be taken to establish a plan, with a reasonable schedule, to correct the deficiency.
- (3) A justification for continued operation (JCO) shall be written and kept on file. This justification does not require NRC review and approval.

A finding of operability may be made using analysis and partial test data to provide reasonable assurance that the equipment will perform its intended safety function, or that failure of the equipment will not result in significant degradation of any safety function or provide misleading information to the operator.

If operability cannot be demonstrated, and the equipment is covered by Plant Technical Specifications, the appropriate action statements will be followed. If the equipment is not covered by the Technical Specifications, the reactor can continue to operate if the safety function can be accomplished by other designated equipment that is qualified, or limited administrative controls can be used to ensure the safety function is performed.

If a deficiency in the environmental qualification of equipment is discovered, reportability under 10 CFR 50.72, 10 CFR 50.73, 10 CFR 21, Technical Specifications, or any other pertinent requirement must be determined. This is especially true if the equipment is determined to be inoperable.



program to the extent described in Topical Report PGE-1043<sup>(10)</sup>.

The approach used to review the environmental qualification of equipment important to safety in harsh environments is described in Section 5.1.

### 3.3 PROCEDURE FOR IDENTIFYING EQUIPMENT IMPORTANT TO SAFETY IN MILD ENVIRONMENTS

Environmental qualification of electric equipment important to safety located in a mild environment is not included within the scope of 10 CFR 50.49. According to 10 CFR 50.49, a mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences. The criteria used to distinguish mild from harsh environment areas is delineated in Chapter 4.

The identification of equipment important to safety in mild environments was conducted in conjunction with the identification of equipment in harsh environments. This process is described in the preceding section. The CSS documents all equipment important to safety in mild environments by component identification number, Plant location, functional and environmental requirements, and equipment data.

The approach used to review the environmental qualification of equipment important to safety in mild environments is described in Section 5.2.

### 3.4 PROCEDURE FOR IDENTIFYING OTHER EQUIPMENT SUBJECT TO ENVIRONMENTAL QUALIFICATION REVIEW

Regulatory Guide 1.97 specifies that Category 3 instrumentation "should be of high-quality commercial grade and should be selected to withstand the specified service environment". Generally, the specified service environment is the normal environment; however, for several Category 3 post-accident instruments at Trojan, it is appropriate to specify the service environment as the post-accident environment. It was also considered appropriate to recategorize several post-accident instruments from Category 2 to Category 3 on the basis of previous requirements specified by NUREG-0737.

The instrumentation in question concerns the post-accident sampling system (NUREG-0737, Item II.B.3), the noble gas effluent monitors (II.F.1.1), and the iodine and particulate sampling capability (II.F.1.2). NUREG-0737 specifies environmental qualification requirements for the noble gas effluent monitors. This requirement appears in Table II.F.1-1 and states that "the instruments shall provide sufficiently accurate responses to perform the intended function in the environment to which they will be exposed during accidents". NUREG-0737 does not specify any environmental qualification requirements for the post-accident sampling system or iodine/particulate sampling capability.

Subsequent to NUREG-0737, 10 CFR 50.49 was promulgated and requires environmental qualification of "certain post-accident monitoring equipment" specified as Category 1 and 2 in Regulatory Guide 1.97. The noble gas effluent monitors are listed in Regulatory Guide 1.97 as Category 2. The post-accident sampling system and iodine/particulate sampling capability are listed in Regulatory Guide 1.97 as Category 3.

The various environmental qualification requirements for the aforementioned equipment are summarized in Table 3-4. With respect to the noble gas effluent monitors, PGE has adopted the position that Regulatory

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT                    | MANUFACTURER | MODEL  | LOCATION<br>#BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|------------------------------|--------------|--------|---------------------------|--------------------------------|---------------|
| A 1        | 4160V SWITCH GEAR            |              |        | T 107 69                  | A TRAIN 4160V DIST             | MILD          |
| A 2        | 4160V SWITCH GEAR            |              |        | C 38 61                   | B TRAIN 4160V DIST             | MILD          |
| AE 5755 A  | H2 ANALYZER ANALYSIS ELEMENT | TELEDYNE     | 225 CM | A 226 93                  | POST LOCA ATM ANAL-CHAS        | 30.4.2        |
| AE 5755 B  | H2 ANALYZER ANALYSIS ELEMENT | TELEDYNE     | 225 CM | A 216 77                  | POST LOCA ATM ANAL-CHAS        | 30.4.2        |
| ATB 008    | TERMINAL BOARD               |              |        | O OUT 45                  | LT 4900 A TO C27A              | MILD          |
| ATB 009    | TERMINAL BOARD               | BUCHANAN     | NQ0511 | E 358 45                  | PT3083A/AFM PUMP A DISCHARGE   | 17.4.2        |
| ATB 010    | TERMINAL BOARD               | SQUARE D     | 828C19 | I 394 23                  | CV 3804 TO C 18 A              | MILD          |
| ATB 013    | TERMINAL BOARD               | SQUARE D     | 828C19 | I 394 23                  | PS 3745 A TO C 18 A            | MILD          |
| ATB 014    | TERMINAL BOARD               |              |        | O OUT 45                  | SS 6336                        | MILD          |
| ATB 016    | TERMINAL BOARD               | BUCHANAN     | NQ8112 | M 442 69                  | AFM PMP STM TURB IN VLV CV1451 | 17.4.2        |
| ATB 017    | TERMINAL BOARD               | BUCHANAN     | NQ8112 | M 443 69                  | AFM PMP STM TURB IN VLV CV1452 | 17.4.2        |
| ATB 018    | TERMINAL BOARD               | BUCHANAN     | NQ8112 | M 444 69                  | AFM PMP STM TURB IN VLV CV1453 | 17.4.2        |
| ATB 019    | TERMINAL BOARD               | BUCHANAN     | NQ8112 | M 445 70                  | AFM PMP STM TURB IN VLV CV1454 | 17.4.2        |
| ATB 021    | TERMINAL BOARD               | GE           | EB-5   | M 349 49                  | Q3043A/C/F/H,AFM FL IND HT TR  | 13.4.2        |
| ATB 022    | CONTROL CABINET              | BUCHANAN     | NQ8106 | M 442 69                  | Q3043A AFM FL HT TR            | EXEMPT        |
| ATB 023    | CONTROL CABINET              | BUCHANAN     | NQ8106 | M 444 77                  | Q3043C AFM FL IND HT TR        | EXEMPT        |
| ATB 024    | CONTROL CABINET              | BUCHANAN     | NQ8106 | M 445 77                  | Q3043F AFM FL IND HT TR        | EXEMPT        |
| ATB 025    | CONTROL CABINET              | BUCHANAN     | NQ8106 | M 443 77                  | Q3043H AFM FL IND HT TR        | EXEMPT        |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT E-ELECTRICAL PENETRATION F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE G-GENERIC COMPONENTS USED IN MANY LOCATIONS

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT       | MANUFACTURER  | MODEL  | LOCATION<br>#BLDG./RM/ELV | SERVICE                         | EQS<br>NUMBER |
|------------|-----------------|---------------|--------|---------------------------|---------------------------------|---------------|
| ATB 050    | TERMINAL BOARD  | BUCHANAN      | 0824   | M 439                     | FT3043H AFM HT TR CHAN A        | EXEMPT        |
| ATB 051    | TERMINAL BOARD  |               |        | O OUT                     | Q7030A/RVILS HT TR CHAN A       | MILD          |
| ATB 052    | CONTROL CABINET |               |        | O OUT                     | Q7031A/RVILS HT TR CHAN B       | MILD          |
| ATB 054    | TERMINAL BOARD  | BUCHANAN      | N2B104 | M 438                     | STM LINE A ISL VLV CV2216       | 17.4.2        |
| ATB 055    | TERMINAL BOARD  | BUCHANAN      | N2B104 | M 441                     | STM LINE B ISL VLV CV2236       | 17.4.2        |
| ATB 056    | TERMINAL BOARD  | BUCHANAN      | N2B104 | M 440                     | STM LINE C ISL VLV CV2256       | 17.4.2        |
| ATB 057    | TERMINAL BOARD  | BUCHANAN      | N2B104 | M 439                     | STM LINE D ISL VLV CV2276       | 17.4.2        |
| ATB 058    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 438                     | AFM TO SGA FROM P102A FIS3004A1 | 17.4.2        |
| ATB 059    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 441                     | AFM TO SGB FROM P102A FIS3004B1 | 17.4.2        |
| ATB 060    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 440                     | AFM TO SGC FROM P102A FIS3004C1 | 17.4.2        |
| ATB 061    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 439                     | AFM TO SGD FROM P102A FIS3004D1 | 17.4.2        |
| ATB 065    | TERMINAL BOARD  | BUCHANAN      | N2B104 | M 448                     | STM LINE D ISL BYP VLV CV2280   | 17.4.2        |
| ATB 068    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 442                     | STM LN A ISLN VALVE             | 17.4.2        |
| ATB 069    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 445                     | STM LN B ISLN VALVE             | 17.4.2        |
| ATB 050    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 444                     | STM LN C ISLN VALVE             | 17.4.2        |
| ATB 051    | TERMINAL BOARD  | BUCHANAN      | N2B112 | M 443                     | STM LN D ISLN VALVE             | 17.4.2        |
| ATB 104    | TERMINAL BOARD  | NO NAME PLATE |        | C 45                      | ST6336B/ST6336E                 | MILD          |
| ATB 203    | SPLICE POINT    | RAYCHEM       | MCSF-N | C 185F                    | TE411A-HOT LEG RCS              | 9.4.2         |
| ATB 204    | SPLICE POINT    | RAYCHEM       | MCSF-N | C 185F                    | TE411B-COLD LEG RCS             | 9.4.2         |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL  | LOCATION<br>*BLDG./RM/ELV | SERVICE             | EQS<br>NUMBER |
|------------|----------------|--------------|--------|---------------------------|---------------------|---------------|
| ATB 205    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSF 45                 | TE410A-HOT LEG RCS  | 9.4.2         |
| ATB 206    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSF 45                 | TE410B COLD LEG RCS | 9.4.2         |
| ATB 207    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 60                 | TE413B-COLD LEG RCS | 9.4.2         |
| ATB 208    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 62                 | TE423B-COLD LEG RCS | 9.4.2         |
| ATB 209    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 60                 | TE433A-HGT LEG RCS  | 9.4.2         |
| ATB 210    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 60                 | TE443A HOT LEG RCS  | 9.4.2         |
| ATB 217    | TERMINAL BOARD | GE           | EP25   | C OBSF 45                 | ST6336A             | EXEMPT        |
| ATB 219    | TERMINAL BOARD |              |        | C OBSA 205                | ST6336B             | EXEMPT        |
| ATB 220    | SPLICE POINT   | RAYCHEM      | WCSF-N | C PRZR 119                | SE 1189 B TO Q75    | 9.4.2         |
| ATB 221    | SPLICE POINT   | RAYCHEM      | WCSF-N | C PRZR 119                | SE 1189 C TO Q75    | 9.4.2         |
| ATB 222    | SPLICE POINT   | RAYCHEM      | WCSF-N | C PRZR 119                | SE 1189 A TO Q75    | 9.4.2         |
| ATB 224    | TERMINAL BOARD | BUCHANAN     | NQB106 | C OBSB 59                 | MO 10010            | 17.4.2        |
| ATB 228    | SPLICE POINT   | RAYCHEM      | WCSF-N | C OBSF 50                 | PT-960              | 9.4.12        |
| ATB 230    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 60                 | TE 910              | 9.4.2         |
| ATB 231    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 60                 | TE 909              | 9.4.2         |
| ATB 232    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 77                 | TE 908              | 9.4.2         |
| ATB 234    | SPLICE POINT   | RAYCHEM      | WCSF-N | C OBSA 93                 | TE 907, TE 906      | 9.4.2         |
| ATB 235    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 60                 | TE 912              | 9.4.2         |
| ATB 236    | SPLICE POINT   | RAYCHEM      | WCSF-N | C IBSA 55                 | TE 911              | 9.4.2         |

\* BUILDING CODE: A=AUXILIARY BUILDING C=CONTAINMENT E=ELECTRICAL PENETRATION F=FUEL BUILDING M=MAIN STEAM SUPPORT STRUCTURE P=PIPE PENETRATION T=TURBINE BUILDING G=GENERIC COMPONENTS USED IN MANY LOCATIONS

T A B L E 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL             | LOCATION<br>#BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|----------------|--------------|-------------------|---------------------------|--------------------------------|---------------|
| ATB 238    | TERMINAL BOARD | BUCHANAN     | NQB112            | M 436                     | CV4470 SERV AIR TO CONT BLDG   | 17.4.2        |
| ATB 407    | TERMINAL BOARD | BUCHANAN     | LATER             | A 161                     | CV 3303                        | EXEMPT        |
| ATB 409    | TERMINAL BOARD | GE           | EB-5              | A 122                     | TE604                          | 13.4.2        |
| ATB 433    | TERMINAL BOARD | SQUARE D     | 828C19            | F 280                     | ST6336C                        | SEE E-2       |
| ATB 440    | TERMINAL BOARD | GE           | EB-5              | P 185                     | MO 8703                        | 13.4.2        |
| ATB 442    | TERMINAL BOARD | GE           | EB-5              | A 203                     | CI/ MO 5651 A,B                | 13.4.2        |
| ATB 460    | TERMINAL BOARD | GE           | EB-5              | A 158                     | TEST INTLK MO 2053A & MO 2056A | 13.4.2        |
| ATB 466    | TERMINAL BOARD | BUCHANAN     | NQB106            | P 195                     | LIS 3216/MP218A                | 17.4.2        |
| ATB 473    | TERMINAL BOARD | BUCHANAN     | SEE INST. DETAILS | P 185                     | GAS RAD W LN VLV CV4301        | 17.4.2        |
| ATB 475    | TERMINAL BOARD | SQUARE D     | NO NAMEPLATE      | F 277                     | TERM BOX - NEHA 1              | SEE E-2       |
| ATB 483    | TERMINAL BOARD | GE           | EB-5              | F 269                     | MVC 206A                       | 13.4.2        |
| ATB 485    | TERMINAL BOARD | GE           | EB-5              | A 221                     | CHAS                           | 13.4.2        |
| ATB 486    | TERMINAL BOARD | BUCHANAN     | NQB106            | A 225                     | CNT PERSONNEL LOCK SV6991      | EXEMPT        |
| ATB 701    | TERMINAL BOARD | GE           | NO NAMEPLATE      | T 91                      | CONT FROM 43-K102A/SS          | MILD          |
| ATB 702    | TERMINAL BOARD | GE           | 264B965           | T 91                      | AFM PHP TURB CONT VLV LS'S     | MILD          |
| ATB 703    | TERMINAL BOARD | GE           | 264B965           | T C160                    | AFM PHP TURB SPEED CONT        | MILD          |
| ATB 704    | TERMINAL BOARD | GE           | 264B965           | T C160                    | AFM PHP TURB INSTR LP          | MILD          |
| ATB 705    | TERMINAL BOARD | GE           | EB                | T 107                     | AFM PHP STM TURB INL VLV       | MILD          |
| ATB 706    | TERMINAL BOARD | GE           | EB                | T 107                     | AFM PHP STM TURB INL VLV       | MILD          |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT E-ELECTRICAL PENETRATION F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER  | MODEL         | LOCATION<br>*BLDG./RM/ELV | SERVICE                    | EQS<br>NUMBER |
|------------|----------------------|---------------|---------------|---------------------------|----------------------------|---------------|
| ATB 711    | TERMINAL BOARD       | GE            | 264B965       | T 113 93                  | FDW & FDW BYP CONT VLV     | MILD          |
| AZ 01      | PENETRATION          | AMPHENOL      | 50003326-01   | C OBSB 67                 | CHAN A PHR                 | 8.4.2         |
| AZ 03      | PENETRATION          | AMPHENOL      | 50003326-02   | C OBSB 66                 | CHAN A PHR & CONT          | 8.4.2         |
| AZ 05      | PENETRATION          | AMPHENOL      | 50003326-21   | C OBSB 67                 | CHAN A PHR & CONT          | 8.4.2         |
| AZ 06      | PENETRATION          | AMPHENOL      | 50003326-03   | C OBSB 63                 | CHAN A INSTRM              | 8.4.2         |
| AZ 07      | PENETRATION          | AMPHENOL      | 50003326-04   | C OBSB 63                 | CHAN A INSTRM              | 8.4.2/3.4.2   |
| AZ 08      | PENETRATION          | CONAX         | 7N95-10000-01 | C OBSB 54                 | CHAN A INSTRM              | 77.4.2        |
| B 1        | 480V SWITCH GEAR     |               |               | T 107 69                  | A TRAIN 480V ESF LC        | MILD          |
| B 2        | 480V SWITCH GEAR     | ITE           |               | C 38 61                   | B TRAIN 480V ESF LC        | MILD          |
| B 3        | 480V SWITCH GEAR     |               |               | T 107 69                  | A TRAIN 480V ESF LC        | MILD          |
| B 4        | 480V SWITCH GEAR     | ITE           |               | C 38 61                   | B TRAIN 480V ESF LC        | MILD          |
| B 21       | MOTOR CONTROL CENTER |               |               | T 107 69                  | 4C9V ESF MOT CONT CTR      | MILD          |
| B 22       | MOTOR CONTROL CENTER | ITE           |               | C 38 61                   | 480V ESF MOT CONT CTR      | MILD          |
| B 23       | MOTOR CONTROL CENTER |               |               | T 107 69                  | 480V ESF MOT CONT CTR      | MILD          |
| B 24       | MOTOR CONTROL CENTER | ITE           |               | C 38 61                   | 480V ESF MOT CONT CTR      | MILD          |
| B 25       | MOTOR CONTROL CENTER |               |               | T 107 69                  | 480V ESF MOT CONT CTR      | MILD          |
| B 26       | MOTOR CONTROL CENTER | ITE           |               | C 38 65                   | 480V ESF MOT CONT CTR      | MILD          |
| BDP 003    | DISCONNECT PANEL     | GAMMA METRICS | 200648101     | C OBSB 70                 | NEUTRON FLUX MONITOR       | 72.4.2        |
| BTB 002    | TERMINAL BOARD       | BUCHANAN      | NQB106        | E 358 56                  | 120 VAC PHR SPLY FOR C160B | 17.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT       | MANUFACTURER | MODEL  | LOCATION<br>#BLDG./RPM/ELV | SERVICE                         | EQS<br>NUMBER |
|------------|-----------------|--------------|--------|----------------------------|---------------------------------|---------------|
| BTB 003    | TERMINAL BOARD  | BUCHANAN     | N2B106 | E 358                      | PT3083B/AFM PUMP B DISCHARGE    | 17.4.2        |
| BTB 008    | TERMINAL BOARD  |              |        | O OUT                      | LT 4900 B TO C 2-9 B            | MILD          |
| BTB 013    | TERMINAL BOARD  | SQUARE D     | 828C19 | I 394                      | PS 3745B TO C 18 B              | MILD          |
| BTB 021    | TERMINAL BOARD  | GE           | EB-5   | M 349                      | Q3043B/D/E/G AFM FL IND HT TR   | 13.4.2        |
| BTB 022    | CONTROL CABINET | BUCHANAN     | N2B106 | M 445                      | Q 3043B AFM FL IND HT TR        | EXEMPT        |
| BTB 023    | CONTROL CABINET | BUCHANAN     | N2B106 | M 443                      | Q3043D AFM FL IND HT TR         | EXEMPT        |
| BTB 024    | CONTROL CABINET | BUCHANAN     | N2B106 | M 442                      | Q3043E AFM FL IND HT TR         | EXEMPT        |
| BTB 025    | CONTROL CABINET | BUCHANAN     | N2B106 | M 444                      | Q3043G AFM FL IND HT TR         | EXEMPT        |
| BTB 030    | TERMINAL BOARD  | BUCHANAN     | 0824   | M 440                      | FT 3043H AFM HT TR CHAN B       | EXEMPT        |
| BTB 031    | TERMINAL BOARD  |              |        | O OUT                      | Q 7031A/RVLIS HT TR CHAN A      | MILD          |
| BTB 032    | CONTROL CABINET |              |        | O OUT                      | Q 7031A/RVLIS HT TR CHAN B      | MILD          |
| BTB 034    | TERMINAL BOARD  | BUCHANAN     | N2B104 | M 438                      | STM LINE A ISL VLV CV2216       | 17.4.2        |
| BTB 035    | TERMINAL BOARD  | BUCHANAN     | N2B104 | M 441                      | STM LINE B ISL VLV CV2236       | 17.4.2        |
| BTB 036    | TERMINAL BOARD  | BUCHANAN     | N2B104 | M 440                      | STM LINE C ISL VLV CV2256       | 17.4.2        |
| BTB 037    | TERMINAL BOARD  | BUCHANAN     | N2B104 | M 439                      | STM LINE D ISL VLV CV2276       | 17.4.2        |
| BTB 038    | TERMINAL BOARD  | BUCHANAN     | N2B112 | M 438                      | AFM TO SGA FROM P102B FIS3004A2 | 17.4.2        |
| BTB 039    | TERMINAL BOARD  | BUCHANAN     | N2B112 | M 441                      | AFM TO SGB FROM P102B FIS3004B2 | 17.4.2        |
| BTB 040    | TERMINAL BOARD  | BUCHANAN     | N2B112 | M 440                      | AFM TO SGC FROM P102B FIS3004C2 | 17.4.2        |
| BTB 041    | TERMINAL BOARD  | BUCHANAN     | N2B112 | M 439                      | AFM TO SGD FROM P102B FIS3004D2 | 17.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL        | LOCATION<br>#BLDG./RM/ELV |         | SERVICE                         | EQS<br>NUMBER |
|------------|----------------|--------------|--------------|---------------------------|---------|---------------------------------|---------------|
| BTB 045    | TERMINAL BOARD | BUCHANAN     | NQB104       | M                         | 447 104 | STM LINE D ISL BYP VLV CV2280   | 17.4.2        |
| BTB 047    | TERMINAL BOARD | BUCHANAN     | NQB104       | M                         | 449 104 | STM LINE B ISL BYP VLV CV2278   | 17.4.2        |
| BTB 075    | TERMINAL BOARD | BUCHANAN     | NQB112       | E                         | 358 54  | ACCUM SAMPLE ISOL VLV,CV5652    | 17.4.2        |
| BTB 076    | TERMINAL BOARD | BUCHANAN     | NQB112       | E                         | 358 54  | RCS HOT LEG SMP ISOL VLV,CV5655 | 17.4.2        |
| BTB 077    | TERMINAL BOARD | BUCHANAN     | NQB112       | E                         | 358 54  | PZR LIQ SPCE SMP ISOL VLV,CV565 | 17.4.2        |
| BTB 078    | TERMINAL BOARD | BUCHANAN     | NQB112       | E                         | 358 54  | PZR VAP SPACE ISOL VLV,CV5659   | 17.4.2        |
| BTB 079    | TERMINAL BOARD | BUCHANAN     | NQB112       | E                         | 358 54  | RCDT SMP TO AUTO GAS ANAL,CV566 | 17.4.2        |
| BTB 104    | TERMINAL BOARD | GE           | NO NAMEPLATE | C                         | 77 105  | IND & CONT FOR MVC 142B         | MILD          |
| BTB 110    | TERMINAL BOARD | BUCHANAN     |              | C                         | 45 77   | GRM TO C20                      | MILD          |
| BTB 203    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 60 | TE421A-HOT LEG RCS              | 9.4.2         |
| BTB 204    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 62 | TE421B-COLD LEG RCS             | 9.4.2         |
| BTB 205    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 62 | TE420A-HOT LEG RCS              | 9.4.2         |
| BTB 206    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 62 | TE420B-COLD LEG RCS             | 9.4.2         |
| BTB 207    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 62 | TE413A-HOT LEG RCS              | 9.4.2         |
| BTB 208    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 62 | TE423A-HOT LEG RCS              | 9.4.2         |
| BTB 209    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSF 45 | TE433B-COLD LEG RCS             | 9.4.2         |
| BTB 210    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | IBSA 60 | TE443B-COLD LEG RCS             | 9.4.2         |
| BTB 218    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | OBSB 84 | TE413A-HOT LEG RCS              | 9.4.2         |
| BTB 219    | SPLICE POINT   | RAYCHEM      | WCSF-N       | C                         | OBSB 77 | TE423A RCS HOT LEG              | 9.4.2         |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL     | LOCATION<br>#BLDG./RM/ELV | SERVICE                         | EQS<br>NUMBER |
|------------|----------------|--------------|-----------|---------------------------|---------------------------------|---------------|
| BTB 221    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C IBSA 60                 | TE 903                          | 9.4.2         |
| BTB 222    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C IBSA 59                 | TE 902                          | 9.4.2         |
| BTB 223    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C IBSA 60                 | TE 904                          | 9.4.2         |
| BTB 224    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C IBSA 77                 | TE 901                          | 9.4.2         |
| BTB 225    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C OBSB 60                 | LT 460, PT 456                  | 9.4.2         |
| BTB 226    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C OBSA 93                 | TE 899, TE 900                  | 9.4.2         |
| BTB 227    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C IBSA 60                 | TE 905                          | 9.4.2         |
| BTB 228    | SPLICE POINT   | RAYCHEM      | MCSF-N    | C OBSF 50                 | PT963                           | 9.4.12        |
| BTB 230    | TERMINAL BOARD | BUCHANAN     | NJB112    | P 170 63                  | CV4000 REAC CLNT DRN TK N2 SPLY | 17.4.2        |
| BTB 231    | TERMINAL BOARD | BUCHANAN     | NJB106    | P 169 45                  | CV4006 REAC CLNT DRN TK OUT     | 17.4.2        |
| BTB 232    | TERMINAL BOARD | BUCHANAN     | NJB106    | P 170 45                  | CV4181 CONT SUPP PPS DISCH.     | 17.4.2        |
| BTB 233    | TERMINAL BOARD | BUCHANAN     | NJB112    | M 436 61                  | CV4471 INSTR AIR TO CONT BLDG   | 17.4.2        |
| BTB 234    | TERMINAL BOARD | BUCHANAN     | NJB211016 | E 358 93                  | CV10001 CONT ISOLATION VALVE    | 17.4.2        |
| BTB 235    | TERMINAL BOARD | BUCHANAN     | NJB211016 | A 226 93                  | CV10004 CONT ISOLATION          | 17.4.2        |
| BTB 406    | TERMINAL BOARD | GE           | EB-5      | A 221 77                  | CHAS                            | 13.4.2        |
| BTB 423    | TERMINAL BOARD | BUCHANAN     | NJB106    | A 164 45                  | CV 3304                         | 17.4.2        |
| BTB 425    | TERMINAL BOARD | GE           | EB-5      | A 226 93                  | MD 5663                         | 13.4.2        |
| BTB 468    | TERMINAL BOARD | GE           | EB-5      | A 203 61                  | MD 5677 MD 5678                 | 13.4.2        |
| BTB 475    | TERMINAL BOARD | BUCHANAN     | NJB106    | A 225 93                  | CNT PERSONNEL LOCK SV6992       | EXEMPT        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT                | MANUFACTURER        | MODEL             | LOCATION<br>*BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|--------------------------|---------------------|-------------------|---------------------------|--------------------------------|---------------|
| BTB 476    | TERMINAL BOARD           | BUCHANAN            | NQB112            | P 219 77                  | CV-10014 CHLD MTR RTN          | 17.4.2        |
| BTB 477    | TERMINAL BOARD           | BUCHANAN            | NQB112            | P 219 77                  | CV-10015 CHLD MTR SPLY         | 17.4.2        |
| BTB 493    | TERMINAL BOARD           | BUCHANAN            | NQB106            | M 446 104                 | SV-2277B/SV-4471               | 17.4.2        |
| BTB 701    | TERMINAL BOARD           | NO NAMEPLATE        |                   | T 90 45                   | AFM PMP DSL CONT               | MILD          |
| BTB 703    | SIGNAL CONVERTER         | HOODHARD            | 8271-179          | T 90 45                   | AFM PMP DSL SPEED CONTROLLER   | MILD          |
| BTB 704    | TERMINAL BOARD/ISL DIODE | TB FIELD FABRICATED | DIODE IRC 40HF100 | T 90 45                   | AFM PMP DSL 24 VDC PHR BUSES   | MILD          |
| BTB 706    | TERMINAL BOARD           | GE                  | EB-5              | T 90 45                   | AFM PMP DSL ST CONT            | 13.4.2        |
| BTB 711    | TERMINAL BOARD           | GE                  | EB-5              | T 113 93                  | FDW & FDW BYP CONT VLVS        | 13.4.2        |
| BZ 01      | PENETRATION              | AMPHENOL            | 50003326-05       | C OBSB 66                 | CHAN B PHR & CONT              | 8.4.2         |
| BZ 03      | PENETRATION              | AMPHENOL            | 50003326-05       | C OBSB 66                 | CHAN B PHR & CONT              | 8.4.2         |
| BZ 05      | PENETRATION              | AMPHENOL            | 50003326-01       | C OBSB 66                 | CHAN B PHR                     | 8.4.2         |
| BZ 06      | PENETRATION              | AMPHENOL            | 50003326-06       | C OBSB 63                 | CHAN B INSTRM                  | 8.4.2         |
| BZ 07      | PENETRATION              | AMPHENOL            | 50003326-04       | C OBSB 63                 | CHAN B INSTRM                  | 8.4.2/3.4.2   |
| BZ 08      | PENETRATION              | CONAX               | 7N95-10000-02     | C OBSB 54                 | CHAN B INSTRM                  | 77.4.2        |
| C 2 A      | CONTROL PANEL            |                     |                   | C 53 93                   | REAC CONT                      | MILD          |
| C 2 B      | CONTROL PANEL            |                     |                   | C 53 93                   | CONT RM CNSL, REAC             | MILD          |
| C 4 A      | CONTROL PANEL            |                     |                   | C 53 93                   | CONT CNSL CVS MKP,FW,CRT&CMPTR | MILD          |
| C 4 B      | CONTROL PANEL            |                     |                   | C 53 93                   | CONT CNSL CVS MKP,FW,CRT&CMPTR | MILD          |
| C 5 A      | CONTROL PANEL            |                     |                   | C 53 93                   | CONT RM CNSL,TURB-GEN          | MILD          |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT     | MANUFACTURER | MODEL | LOCATION<br>*BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|---------------|--------------|-------|---------------------------|--------------------------------|---------------|
| C 5 B      | CONTROL PANEL |              |       | C 53 93                   | CONT RM CNCL TURB-GEN          | MILD          |
| C 6        | CONTROL PANEL |              |       | C 53 93                   | PAM (PRM 16)                   | MILD          |
| C 7 A      | CONTROL PANEL |              |       | C 53 77                   | POST LOCA H2 RECOMBINER CHAN A | MILD          |
| C 7 B      | CONTROL PANEL |              |       | C 53 61                   | POST LOCA H2 RECOMBINER CHAN B | MILD          |
| C 9 A      | CONTROL PANEL |              |       | C 53 93                   | PAM (ARM 15A)                  | MILD          |
| C 9 B      | CONTROL PANEL |              |       | C 53 93                   | PAM (ARM 15B)                  | MILD          |
| C 11 A     | CONTROL PANEL |              |       | C 53 93                   | VERT BD, FR, ELEC              | MILD          |
| C 11 B     | CONTROL PANEL |              |       | C 53 93                   | VERT BD, FR, ELEC              | MILD          |
| C 12 A     | CONTROL PANEL |              |       | C 53 93                   | REAC CONT & INSTR CVCS         | MILD          |
| C 12 B     | CONTROL PANEL |              |       | C 53 93                   | REAC CONT & INSTR CVCS         | MILD          |
| C 13 A     | CONTROL PANEL |              |       | C 53 93                   | VERT BNCHBD, RCS & PRSRZ       | MILD          |
| C 13 B     | CONTROL PANEL |              |       | C 53 93                   | VERT BNCHBD, RCS & PRSRZ       | MILD          |
| C 15 B     | CONTROL PANEL |              |       | C 53 93                   | VERT BNCH, T-G AUX             | MILD          |
| C 16       | CONTROL PANEL |              |       | C 53 93                   | VERT BNCHBD CRCLT MTR CLG TWR  | MILD          |
| C 16 A     | CONTROL PANEL |              |       | C 53 93                   | VERT BNCHBD, CRCLT MTR CLG TWR | MILD          |
| C 17 A     | CONTROL PANEL |              |       | C 53 93                   | PLANT AUX, HVAC, RAD W         | MILD          |
| C 17 B     | CONTROL PANEL |              |       | C 53 93                   | PLANT AUX, HVAC, RAD W         | MILD          |
| C 18 A     | CONTROL PANEL |              |       | C 53 93                   | SM SYS VERT CONT BD            | MILD          |
| C 18 B     | CONTROL PANEL |              |       | C 53 93                   | SM SYS VERT CONT BD            | MILD          |

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TABLE 3-2

ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT     | MANUFACTURER | MODEL | LOCATION<br>#BLDG./RM/ELV | SERVICE            | EQS<br>NUMBER |
|------------|---------------|--------------|-------|---------------------------|--------------------|---------------|
| C 19 A     | CONTROL PANEL |              |       | C 53 93                   | ESF                | MILD          |
| C 19 B     | CONTROL PANEL |              |       | C 53 93                   | ESF                | MILD          |
| C 20       | CONTROL PANEL |              |       | C 53 93                   | PAM (ARM 11,12,13) | MILD          |
| C 21 A     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 21 B     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 22 A     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 22 B     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 23       | CONTROL PANEL |              |       | C 53 93                   | MN CONT BD, REAR   | MILD          |
| C 23 A     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 24       | CONTROL PANEL |              |       | C 53 93                   | MN CONT BD, REAR   | MILD          |
| C 25       | CONTROL PANEL |              |       | C 53 93                   | MN CONT BD, REAR   | MILD          |
| C 26       | CONTROL PANEL |              |       | C 53 93                   | MN CONT BD, REAR   | MILD          |
| C 27 A     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 27 C     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 28 A     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 28 B     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 29       | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 29 A     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |
| C 29 B     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR       | MILD          |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT     | MANUFACTURER | MODEL | LOCATION<br>#BLDG./RM/ELV | SERVICE                         | EQS<br>NUMBER |
|------------|---------------|--------------|-------|---------------------------|---------------------------------|---------------|
| C 29 D     | CONTROL PANEL |              |       | C 53 93                   | BNCHBD, REAR                    | MILD          |
| C 36 A     | CONTROL PANEL |              |       | C 53 93                   | PROT SET I                      | MILD          |
| C 36 B     | CONTROL PANEL |              |       | C 53 93                   | PROT SET II                     | MILD          |
| C 36 C     | CONTROL PANEL |              |       | C 53 93                   | PROT SET III                    | MILD          |
| C 36 D     | CONTROL PANEL |              |       | C 53 93                   | PROT SET IV                     | MILD          |
| C 36 A1    | CONTROL PANEL |              |       | C 53 93                   | PROT SET 1, RACK 1              | MILD          |
| C 36 A2    | CONTROL PANEL |              |       | C 53 93                   | PROT SET 1, RACK 2              | MILD          |
| C 36 A3    | CONTROL PANEL |              |       | C 53 93                   | PROT SET 1, RACK 3              | MILD          |
| C 36 A4    | CONTROL PANEL |              |       | C 53 93                   | PROT SET 1, RACK 4              | MILD          |
| C 36 A5    | CONTROL PANEL |              |       | C 53 93                   | IND & CONT RACK, PROT           | MILD          |
| C 36 A6    | CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT RACK, CONT GRP1 | MILD          |
| C 36 B1    | CONTROL PANEL |              |       | C 53 93                   | PRJT SET II, RACK 6             | MILD          |
| C 36 B2    | CONTROL PANEL |              |       | C 53 93                   | INSTN & CONT RACK PROT          | MILD          |
| C 36 B3    | CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT PROT SET        | MILD          |
| C 36 B4    | CONTROL PANEL |              |       | C 53 93                   | IND & CONT RACK, PROT           | MILD          |
| C 36 B5    | CONTROL PANEL |              |       | C 53 93                   | PROT SET II, RACK 10            | MILD          |
| C 36 B7    | CONTROL PANEL |              |       | C 53 93                   | PRCS CONT GROUP II, RACK 22     | MILD          |
| C 36 C1    | CONTROL PANEL |              |       | C 53 93                   | PRCS I&C PROT SET III, RACK 11  | MILD          |
| C 36 C2    | CONTROL PANEL |              |       | C 53 93                   | PRCS I&C PROT SET III, RACK 12  | MILD          |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT           | MANUFACTURER | MODEL | LOCATION<br>*BLDG./RM/ELV | SERVICE                       | EQS<br>NUMBER |
|------------|---------------------|--------------|-------|---------------------------|-------------------------------|---------------|
| C          | 36 C3 CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT PROT SET III  | MILD          |
| C          | 36 C5 CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT GRP III       | MILD          |
| C          | 36 C6 CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT RACK          | MILD          |
| C          | 36 D1 CONTROL PANEL |              |       | C 53 93                   | PRCS I&C PROT SET IV RACK 14  | MILD          |
| C          | 36 D2 CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT PROT SET 4    | MILD          |
| C          | 36 D3 CONTROL PANEL |              |       | C 53 93                   | PRCS I&C PROT SET III RACK 16 | MILD          |
| C          | 36 D4 CONTROL PANEL |              |       | C 53 93                   | PRCS I&C CONT GRP IV RACK 28  | MILD          |
| C          | 36 D5 CONTROL PANEL |              |       | C 53 93                   | PRCS IND & CONT GRP IV        | MILD          |
| C          | 36 D6 CONTROL PANEL |              |       | C 53 93                   | PRCS I&C GRP IV VCT LVL IND   | MILD          |
| C          | 40 A CONTROL PANEL  |              |       | C 53 93                   | PROT SYS TEST CAB             | MILD          |
| C          | 40 B CONTROL PANEL  |              |       | C 53 93                   | PROT SYS TEST CAB             | MILD          |
| C          | 42 CONTROL PANEL    |              |       | C 53 93                   | SEISMIC HWG                   | MILD          |
| C          | 44 B CONTROL PANEL  |              |       | C 53 93                   | AUX SAFEGUARDS CAB            | MILD          |
| C          | 45 A CONTROL PANEL  |              |       | C 53 93                   | AUX SAFEGUARDS                | MILD          |
| C          | 46 A CONTROL PANEL  |              |       | C 54 93                   | SSPS A INPUT RACK             | MILD          |
| C          | 46 B CONTROL PANEL  |              |       | C 54 93                   | SSPS A INPUT RACK             | MILD          |
| C          | 46 C CONTROL PANEL  |              |       | C 54 93                   | SSPS A INPUT RACK             | MILD          |
| C          | 46 D CONTROL PANEL  |              |       | C 54 93                   | SSPS A INPUT RACK             | MILD          |
| C          | 47 A CONTROL PANEL  |              |       | C 54 93                   | SSPS B INPUT RACK             | MILD          |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

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| PLANT ID # | COMPONENT     | MANUFACTURER | MODEL | LOCATION<br>*BLDG./RM/ELV | SERVICE                      | EQS<br>NUMBER |
|------------|---------------|--------------|-------|---------------------------|------------------------------|---------------|
| C 47 B     | CONTROL PANEL |              |       | C 54 93                   | SSPS B INPUT RACK            | MILD          |
| C 47 C     | CONTROL PANEL |              |       | C 54 93                   | SSPS B INPUT RACK            | MILD          |
| C 47 D     | CONTROL PANEL |              |       | C 54 93                   | SSPS B INPUT RACK            | MILD          |
| C 48 A     | CONTROL PANEL |              |       | C 54 93                   | SSPS TRAIN A LOGIC           | MILD          |
| C 48 B     | CONTROL PANEL |              |       | C 54 93                   | SSPS TRAIN B LOGIC           | MILD          |
| C 49 A     | CONTROL PANEL |              |       | C 53 93                   | SSPS                         | MILD          |
| C 49 B     | CONTROL PANEL |              |       | C 53 93                   | SSPS                         | MILD          |
| C 60 A     | CONTROL PANEL |              |       | C 53 93                   | RVLS                         | MILD          |
| C 60 B     | CONTROL PANEL |              |       | C 53 93                   | RVLS                         | MILD          |
| C 64 A     | CONTROL PANEL |              |       | C 53 93                   | ISLN I/O TO TSC CPU          | MILD          |
| C 64 B     | CONTROL PANEL |              |       | C 53 93                   | ISLN I/O TO TSC CPU          | MILD          |
| C 101      | CONTROL PANEL |              |       | T 85 45                   | DSL GEN # 1 EXCITER          | MILD          |
| C 102      | CONTROL PANEL |              |       | T 86 45                   | DSL GEN # 2 EXCITER          | MILD          |
| C 121      | CONTROL PANEL |              |       | C 38 65                   | REAC TRIP SHGR, MN BRKR      | MILD          |
| C 122      | CONTROL PANEL |              |       | C 38 65                   | REAC TRIP SHGR, BACK-UP BRKR | MILD          |
| C 160 A    | CONTROL PANEL |              |       | T C160 45                 | AFM CONT & AUX SHTDN PNL     | MILD          |
| C 160 B    | CONTROL PANEL |              |       | T C160 45                 | AFM CONT & AUX SHTDN PNL     | MILD          |
| C 219      | CONTROL PANEL | HEGMANN      | N/A   | F 234 45                  | SH SYS STR # 1 CONT          | SEE E-2       |
| C 220      | CONTROL PANEL |              |       | F 234 45                  | SH SYS STR # 2 CONT          | MILD          |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT E-ELECTRICAL PENETRATION F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS

 Amendment 5  
(August 1988)



## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT           | MANUFACTURER  | MODEL | LOCATION<br>#BLDG./RM/ELV | SERVICE                         | EQS.<br>NUMBER |
|------------|---------------------|---------------|-------|---------------------------|---------------------------------|----------------|
| C 254      | CONTROL PANEL       |               |       | C 77                      | H & V CONT PNL SYS CB-1         | MILD           |
| C 255      | CONTROL PANEL       |               |       | C 77                      | H & V CONT PNL SYS CB-1         | MILD           |
| C 259      | CONTROL PANEL       |               |       | C 77                      | CONT RM EHER ELEC RTG           | MILD           |
| C 260      | CONTROL PANEL       |               |       | C 77                      | CONT RM EHER ELEC RTG           | MILD           |
| C 265      | CONTROL PANEL       | SELICO        | N/A   | C 27                      | SMPL LN ISLN VLV PNL 1A;        | SEE E-2        |
| C 266      | CONTROL PANEL       | SELICO        | N/A   | C 27                      | SMPL LN ISLN VLV PNL 1B;        | SEE E-2        |
| C 287      | CONTROL PANEL       | COMSIP-DELPHI | N/A   | P 222                     | CONTAINMENT ATMOSPHERE SAMPLING | EXEMPT         |
| C 318 A    | CONTROL PANEL       |               |       | 123                       | AFM CONTROL PANEL               | MILD           |
| C 318 B    | CONTROL PANEL       |               |       | 183                       | AFM CONTROL PANEL               | MILD           |
| C 344      | CONTROL PANEL       | COMSIP-DELPHI | N/A   | C 24                      | CONTAINMENT ATMOSPHERE SAMPLING | EXEMPT         |
| C 355      | SOLENOID VALVE BACK | COMSIP-DELPHI | N/A   | C 27                      | CONTAINMENT ATMOSPHERE SAMPLING | EXEMPT         |
| C 347      | EQUIPMENT BACK      | COMSIP-DELPHI | N/A   | C 27                      | CONTAINMENT ATMOSPHERE SAMPLING | EXEMPT         |
| C 348      | EQUIPMENT BACK      | COMSIP-DELPHI | N/A   | A 226                     | CONTAINMENT ATMOSPHERE SAMPLING | EXEMPT         |
| C 348 A    | SOLENOID VALVE BACK | COMSIP-DELPHI | N/A   | A 226                     | CONTAINMENT ATMOSPHERE SAMPLING | EXEMPT         |
| C 400 A    | ANALYZER PANEL      | TELEDYNE      | 225CM | A 226                     | POST LOCA ATM ANAL-CHAS         | 30.4.2         |
| C 400 B    | ANALYZER PANEL      | TELEDYNE      | 225CM | A 216                     | POST LOCA ATM ANAL CHAS         | 30.4.2         |
| C 401 A    | CONTROL PANEL       | TELEDYNE      | 225CM | A 221                     | POST LOCA ATM ANAL-CHAS         | 30.4.2         |
| C 401 B    | CONTROL PANEL       | TELEDYNE      | 225CM | A 209                     | POST LOCA ATM ANAL-CHAS         | 30.4.2         |
| CTB 203    | SPICE POINT         | RAYCHEM       | MSJ-N | C 185A                    | TE-331A-HOT LEG                 | 9.4.2          |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT             | MANUFACTURER     | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                       | EQS<br>NUMBER |
|------------|-----------------------|------------------|-------------|---------------------------|-------------------------------|---------------|
| CTB 204    | SPLICE POINT          | RAYCHEM          | WCSF-N      | C IBSA 60                 | TE431B COLD LEG               | 9.4.2         |
| CTB 205    | SPLICE POINT          | RAYCHEM          | WCSF-N      | C IBSA 60                 | TE430A HOT LEG                | 9.4.2         |
| CTB 206    | SPLICE POINT          | RAYCHEM          | WCSF-N      | C IBSA 60                 | TE430B COLD LEG               | 9.4.2         |
| CTB 210    | SPLICE POINT          | RAYCHEM          | WCSF-N      | C OBSB 60                 | LT 461, PT 457                | 9.4.2         |
| CTB 228    | SPLICE POINT          | RAYCHEM          | WCSF-N      | C OBSF 50                 | PT964                         | 9.4.12        |
| CTB 401    | TERMINAL BOARD        | N/A              |             | A 137 5                   | FT971A & B                    | EXEMPT        |
| CV 3004 A1 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 438 59                  | STM GEN E201A FROM TD AFW PMP | 64.4.2        |
| CV 3004 A2 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 438 59                  | STM GEN E201A FROM DD AFW PMP | 64.4.2        |
| CV 3004 B1 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 441 59                  | STM GEN E201B FROM TD AFW PMP | 64.4.2        |
| CV 3004 B2 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 441 59                  | STM GEN E201B FROM DD AFW PMP | 64.4.2        |
| CV 3004 C1 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 440 59                  | STM GEN E201C FROM TD AFW PMP | 64.4.2        |
| CV 3004 C2 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 440 59                  | STM GEN E201C FROM DD AFW PMP | 64.4.2        |
| CV 3004 D1 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 439 59                  | STM GEN E201D FROM TD AFW PMP | 64.4.2        |
| CV 3004 D2 | MOTOR OPERATED VALVE  | LIMITORQUE       | SMB-000     | M 439 59                  | STM GEN E201D FROM DD AFW PMP | 64.4.2        |
| CZ 06      | PENETRATION           | AMPHENOL         | 50003326-07 | C OBSB 54                 | CHAN C INSTRM                 | 8.4.2         |
| CZ 07      | PENETRATION           | AMPHENOL         | 50003326-08 | C OBSB 54                 | CHAN C INSTRM                 | 8.4.2/3.4.2   |
| D 9        | DISTRIBUTION PANEL    |                  |             | C 38 61                   | 125 V EMER LIGHTING           | MILD          |
| D 10       | DISTRIBUTION BUS (DC) | GENERAL ELECTRIC |             | C 38 65                   | 125V DC CONT CTR BUS          | MILD          |
| D 10 X     | 125 VDC PANEL         |                  |             | C 38 65                   | DC PNL FOR D10 FDR BQKR       | MILD          |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT             | MANUFACTURER         | MODEL | LOCATION<br>*BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER |
|-------------|-----------------------|----------------------|-------|---------------------------|-----------------------------|---------------|
| 7           | 10SHN DC AMMETER      |                      |       | C 38 61                   | BTRY #1 CUR LOAD            | MILD          |
| D 11        | 125 VDC BATTERY       | C & D BATTERIES      |       | C 39 65                   | BUS D10, D30 BTRY           | MILD          |
| D 12        | 125 VDC BATTERY       | C & D BATTERIES      |       | C 40 65                   | BUS D20, D40 BTRY           | MILD          |
| D 20        | DISTRIBUTION BUS (DC) | GENERAL ELECTRIC     |       | C 38 65                   | 125V CONT CTR BUS           | MILD          |
| D 20 X      | 125 VDC PANEL         |                      |       | C 38 65                   | DC PNL FOR D10 FOR BRKR     | MILD          |
| D 20SHN     | DC AMMETER            |                      |       | C 38 61                   | BTRY #2 CUR LOAD            | MILD          |
| D 21        | BATTERY CHARGER       | PWR CONVERSION PROD. |       | C 38 65                   | 125V BTRY CHGR              | MILD          |
| D 22        | BATTERY CHARGER       | PWR CONVERSION PROD. |       | C 38 65                   | 125V BTRY CHGR              | MILD          |
| D 23        | BATTERY CHARGER       | PWR CONVERSION PROD. |       | C 38 65                   | 125V BTRY CHGR              | MILD          |
| D 24        | BATTERY CHARGER       | PWR CONVERSION PROD. |       | C 38 65                   | 125V BTRY CHGR              | MILD          |
| D 30        | DISTRIBUTION BUS (DC) | GENERAL ELECTRIC     |       | C 38 65                   | 125V CONT CTR BUS           | MILD          |
| D 30 X      | 125 VDC PANEL         |                      |       | C 38 65                   | DC PNL FOR D30 FOR BRKR     | MILD          |
| D 40        | DISTRIBUTION BUS (DC) | GENERAL ELECTRIC     |       | C 38 65                   | 125V CONT CTR BUS           | MILD          |
| D 40 X      | 125 VDC PANEL         |                      |       | C 38 65                   | DC PNL FOR D 40 FOR BRKR    | MILD          |
| D 62        | LIGHTING PANEL        |                      |       | C 38 61                   | CONTROL BLDG                | MILD          |
| D 63        | LIGHTING PANEL        |                      |       | F 201 93                  | FUEL BLDG                   | SEE E-2       |
| DM 10250CB2 | DAMPER MOTOR          |                      |       | C 53 93                   | OUTSIDE AIR DMPR ,CB-2      | MILD          |
| DM 10250CB3 | DAMPER MOTOR          |                      |       | C 53 93                   | FUME HOOD EXH FAN CONT CB-3 | MILD          |
| DM 10250CB4 | DAMPER MOTOR          |                      |       | C 53 93                   | TOILET EXH FAN CONT CB-4    | MILD          |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT              | MANUFACTURER | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER |
|-------------|------------------------|--------------|-------------|---------------------------|-----------------------------|---------------|
| DM 10251 A  | DAMPER MOTOR           |              |             | C 53 93                   | OUTSIDE AIR DMPR, CB-1      | MILD          |
| DM 10251 B  | DAMPER MOTOR           |              |             | C 53 93                   | OUTSIDE AIR DMPR, CB-1      | MILD          |
| DM 10501    | DAMPER MOTOR           |              |             | C 53 93                   | RECIRC AIR DMPR CB-2        | MILD          |
| DM 10502    | DAMPER MOTOR           |              |             | C 53 93                   | RECIRC AIR DMPR CB-2        | MILD          |
| DM 10503    | DAMPER MOTOR           |              |             | C 53 93                   | EXH AIR DMPR CB-12          | MILD          |
| DM 10504    | DAMPER MOTOR           |              |             | C 53 93                   | SPLY AIR DMPR CB-2          | MILD          |
| DTB 203     | SPLICE POINT           | RAYCHEM      | WCSF-N      | C IBSA 60                 | TE441A HOT LEG              | 9.4.2         |
| DTB 204     | SPLICE POINT           | RAYCHEM      | WCSF-N      | C IBSA 60                 | TE441B COLD LEG             | 9.4.2         |
| DTB 205     | SPLICE POINT           | RAYCHEM      | WCSF-N      | C IBSA 60                 | TE440A HOT LEG              | 9.4.2         |
| DTB 206     | SPLICE POINT           | RAYCHEM      | WCSF-N      | C IBSA 60                 | TE440B COLD LEG             | 9.4.2         |
| DTB 210     | SPLICE POINT           | RAYCHEM      | WCSF-6      | C OBSB 72                 | PT 458                      | 9.4.2         |
| DTB 228     | SPLICE POINT           | RAYCHEM      | WCSF-N      | C OBSF 50                 | PT967                       | 9.4.12        |
| DTB 401     | TERMINAL BOARD         | N/A          |             | A 137 5                   | FT970 A & B                 | EXEMPT        |
| DZ 06       | PENETRATION            | AMPHENOL     | 50003326-07 | C OBSB 54                 | CHAN D INSTRM               | 8.4.2         |
| DZ 07       | PENETRATION            | AMPHENOL     | 50003326-09 | C OBSB 54                 | CHAN D INSTRM               | 8.4.2/3.4.2   |
| FIS 610     | FLOW INDICATION SWITCH | BARTON       | 288A        | A 137 5                   | P202A                       | EXEMPT        |
| FIS 611     | FLOW INDICATION SWITCH | BARTON       | 288A        | A 137 5                   | P202B                       | EXEMPT        |
| FIS 3004 A1 | FLOW INDICATION SWITCH | BARTON       | 580A-0      | M 438 59                  | AFM TO STM GEN A FROM P102A | 60.4.2        |
| FIS 3004 A2 | FLOW INDICATION SWITCH | BARTON       | 580A-0      | M 438 59                  | AFM TO STM GEN A FROM P102B | 60.4.2        |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT                   | MANUFACTURER | MODEL  | LOCATION<br>*BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER |
|-------------|-----------------------------|--------------|--------|---------------------------|-----------------------------|---------------|
| FIS 3004 B1 | FLOW INDICATION SWITCH      | BARTON       | 580A-0 | M 441 59                  | AFW TO STM GEN B FROM P102A | 60.4.2        |
| FIS 3004 B2 | FLOW INDICATION SWITCH      | BARTON       | 580A-0 | M 441 59                  | AFW TO STM GEN B FROM P102B | 60.4.2        |
| FIS 3004 C1 | FLOW INDICATION SWITCH      | BARTON       | 580A-0 | M 440 59                  | AFW TO STM GEN C FROM P102A | 60.4.2        |
| FIS 3004 C2 | FLOW INDICATION SWITCH      | BARTON       | 580A-0 | M 440 59                  | AFW TO STM GEN C FROM P102B | 60.4.2        |
| FIS 3004 D1 | FLOW INDICATION SWITCH      | BARTON       | 580A-0 | M 439 59                  | AFW TO STM GEN D FROM P102A | 60.4.2        |
| FIS 3004 D2 | FLOW INDICATION SWITCH      | BARTON       | 580A-0 | M 439 59                  | AFW TO STM GEN D FROM P102B | 60.4.2        |
| FIT 917     | FLOW INDICATING TRANSMITTER | BARTON       | 384    | A 158 25                  | CCW PMP DISCH               | EXEMPT        |
| FT 414      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L1 COLD LEG             | EXEMPT        |
| FT 415      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L1 COLD LEG             | EXEMPT        |
| FT 416      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L1 COLD LEG             | EXEMPT        |
| FT 424      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L2 COLD LEG             | EXEMPT        |
| FT 425      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L2 COLD LEG             | EXEMPT        |
| FT 426      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L2 COLD LEG             | EXEMPT        |
| FT 434      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L3 COLD LEG             | EXEMPT        |
| FT 435      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L3 COLD LEG             | EXEMPT        |
| FT 436      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L3 COLD LEG             | EXEMPT        |
| FT 444      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L4 COLD LEG             | EXEMPT        |
| FT 445      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L4 COLD LEG             | EXEMPT        |
| FT 446      | FLOW TRANSMITTER            | FOXBORO      | E130H  | C OBSF 45                 | RCS L4 COLD LEG             | EXEMPT        |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT        | MANUFACTURER | MODEL | LOCATION<br>*BLDG./RM/ELV | SERVICE                      | EQS<br>NUMBER |
|------------|------------------|--------------|-------|---------------------------|------------------------------|---------------|
| FT 510     | FLOW TRANSMITTER | BARTON       | 384   | T 103 63                  | STM GEN LP 1 FDW/FS MISMATCH | MILD          |
| FT 511     | FLOW TRANSMITTER | BARTON       | 384   | T 103 63                  | STM GEN LP 1 FDW/FS MISMATCH | MILD          |
| FT 512     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 1                 | 38.4.2        |
| FT 513     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 1                 | 38.4.2        |
| FT 520     | FLOW TRANSMITTER | BARTON       | 384   | T 103 68                  | STM GEN LP 2 FDW/FS MISMATCH | MILD          |
| FT 521     | FLOW TRANSMITTER | BARTON       | 384   | T 103 68                  | STM GEN LP 2 FDW/FS MISMATCH | MILD          |
| FT 522     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 2                 | 38.4.2        |
| FT 523     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 2                 | 38.4.2        |
| FT 530     | FLOW TRANSMITTER | BARTON       | 384   | T 103 63                  | STM GEN LP 3 FDW/FS MISMATCH | MILD          |
| FT 531     | FLOW TRANSMITTER | BARTON       | 384   | T 103 63                  | STM GEN LP 3 FDW/FS MISMATCH | MILD          |
| FT 532     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 3                 | 38.4.2        |
| FT 533     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 3                 | 38.4.2        |
| FT 540     | FLOW TRANSMITTER | BARTON       | 384   | T 103 63                  | STM GEN LP 4 FDW/FS MISMATCH | MILD          |
| FT 541     | FLOW TRANSMITTER | BARTON       | 384   | T 103 63                  | STM GEN LP 4 FDW/FS MISMATCH | MILD          |
| FT 542     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 4                 | 38.4.2        |
| FT 543     | FLOW TRANSMITTER | BARTON       | 764   | C OBSF 45                 | STM GEN LP 4                 | 38.4.2        |
| FT 600     | FLOW TRANSMITTER | BARTON       | 384   | F 234 45                  | RHR HOT LEG INJN             | EXEMPT        |
| FT 918     | FLOW TRANSMITTER | BARTON       | 384   | A 137 5                   | SI PHP A DISCH               | EXEMPT        |
| FT 922     | FLOW TRANSMITTER | BARTON       | 384   | A 137 5                   | SI PHP B DISCH               | EXEMPT        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT           | MANUFACTURER | MODEL       | LOCATION<br>*BLDG./RM/ELV |        | SERVICE                         | EQS<br>NUMBER |
|------------|---------------------|--------------|-------------|---------------------------|--------|---------------------------------|---------------|
| FT 970 A   | FLOW TRANSMITTER    | BARTON       | 384         | A                         | 137 5  | RHR TRAIN B OUT                 | EXEMPT        |
| FT 970 B   | FLOW TRANSMITTER    | BARTON       | 384         | A                         | 137 5  | RHR TRAIN B OUT                 | EXEMPT        |
| FT 971 A   | FLOW TRANSMITTER    | BARTON       | 384         | A                         | 158 5  | RHR TRAIN A OUT                 | EXEMPT        |
| FT 971 B   | FLOW TRANSMITTER    | BARTON       | 384         | A                         | 158 5  | RHR TRAIN A OUT                 | EXEMPT        |
| FT 2079 A  | FLOW TRANSMITTER    | ROSEMOUNT    | 1153HA6     | A                         | 143 30 | SPRAY ADDITIVE PUMP A DISCHARGE | 39.4.2        |
| FT 2079 B  | FLOW TRANSMITTER    | ROSEMOUNT    | 1153HA6     | A                         | 143 30 | SPRAY ADDITIVE PUMP B DISCHARGE | 39.4.2        |
| FT 3043 A  | FLOW TRANSMITTER    | FOXBORO      | N-E13DM     | M                         | 442 70 | AFW FL TO STM GEN E201A         | 14.4.2        |
| FT 3043 B  | FLOW TRANSMITTER    | FOXBORO      | N-E13DM     | M                         | 445 70 | AFW FL TO STM GEN E201B         | 14.4.2        |
| FT 3043 C  | FLOW TRANSMITTER    | FOXBORO      | N-E13DM     | M                         | 444 70 | AFW FL TO STM GEN E201C         | 14.4.2        |
| FT 3043 D  | FLOW TRANSMITTER    | FOXBORO      | N-E13DM     | M                         | 443 70 | AFW FL TO STM GEN E201D         | 14.4.2        |
| FT 3043 E  | FLOW TRANSMITTER    | ROSEMOUNT    | 1153HA6     | M                         | 443 59 | AFW FL TO STM GEN E201A         | 39.4.2        |
| FT 3043 F  | FLOW TRANSMITTER    | ROSEMOUNT    | 1153HA6     | M                         | 441 59 | AFW FL TO STM GEN E201B         | 39.4.2        |
| FT 3043 G  | FLOW TRANSMITTER    | ROSEMOUNT    | 1153HA6     | M                         | 440 59 | AFW FL TO STM GEN E201C         | 39.4.2        |
| FT 3043 H  | FLOW TRANSMITTER    | ROSEMOUNT    | 1153HA6     | M                         | 439 59 | AFW FL TO STM GEN E201D         | 39.4.2        |
| FY 606     | I/P CONVERTER       | FISHER       | TYPE 546    | A                         | 137 5  | RHR HT EXCHR A OUT              | EXEMPT        |
| FY 607     | I/P CONVERTER       | FISHER       | TYPE 546    | A                         | 137 5  | RHR HT EXCHR B OUT              | EXEMPT        |
| G 101      | DIESEL GENERATOR #1 | NO NAMEPLATE |             | T                         | 85 45  | EMER PHR TO BUS A1              | MILD          |
| G 102      | EXCITER             |              |             | T                         | 85 45  | DSL GEN # 1                     | MILD          |
| G 103      | GROUNDING RESISTOR  | GE           | 275X630C377 | T                         | 85 45  | DSL GEN # 1 NEUTRAL             | MILD          |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT               | MANUFACTURER | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                  | EQS<br>NUMBER |
|------------|-------------------------|--------------|-------------|---------------------------|--------------------------|---------------|
| G 201      | DIESEL GENERATOR #2     | NO NAMEPLATE |             | T 86 45                   | EMER POWER TO BUS A2     | MILD          |
| G 202      | EXCITER                 |              |             | T 86 45                   | DSL GEN # 2              | MILD          |
| G 203      | GROUNDING RESISTOR      | GE           | 275X630C377 | T 86 45                   | DSL GEN #2 NEUTRAL       | MILD          |
| LIS 896    | LEVEL INDICATING SWITCH | BARTON       | 581-4       | E 358 56                  | RVLS HYD ISLN OVERTRAVEL | 57.4.2        |
| LIS 897    | LEVEL INDICATING SWITCH | BARTON       | 581-4       | E 358 56                  | RVLS HYD ISLN OVERTRAVEL | 57.4.2        |
| LIS 898    | LEVEL INDICATING SWITCH | BARTON       | 581-4       | E 358 56                  | RVLS HYD ISLN OVERTRAVEL | 57.4.2        |
| LIS 916    | LEVEL INDICATING SWITCH | BARTON       | 581-4       | E 358 45                  | RVLS HYD ISLN OVERTRAVEL | 57.4.2        |
| LIS 920    | LEVEL INDICATING SWITCH | BARTON       | 581-4       | E 358 45                  | RVLS HYD ISLN OVERTRAVEL | 57.4.2        |
| LIS 921    | LEVEL INDICATING SWITCH | BARTON       | 581-4       | E 358 45                  | RVLS HYD ISLN OVERTRAVEL | 57.4.2        |
| LIS 3216   | LEVEL INDICATING SWITCH | BARTON       | 288A        | P 219 77                  | CCW SURGE TK T204A       | 33.4.2        |
| LIS 3217   | LEVEL INDICATING SWITCH | BARTON       | 288A        | P 219 77                  | CCW SURGE TK 204B        | 33.4.2        |
| LS 3752 A  | LEVEL SWITCH            | BARTON       | 288A        | F 234 45                  | AUX BLDG HI LVL          | 33.4.2        |
| LS 3752 B  | LEVEL SWITCH            | BARTON       | 288A        | F 234 45                  | AUX BLDG HI LVL          | 33.4.2        |
| LS 4905 A  | LEVEL SWITCH            | BARTON       | 288A        | T 85 45                   | EDG TK LVL T-111A        | 33.4.2        |
| LS 4905 B  | LEVEL SWITCH            | BARTON       | 288A        | T 86 45                   | EDG TK LVL T-111B        | 33.4.2        |
| LS 4909 A  | LEVEL SWITCH            | BARTON       | 288A        | T 90 45                   | DSL DAY TK T-152 LVL     | 33.4.2        |
| LS 4909 B  | LEVEL SWITCH            | BARTON       | 288A        | T 90 45                   | DSL DAY TK T-152 LVL     | 33.4.2        |
| LS 4911 A  | LEVEL SWITCH            | BARTON       | 288A        | T 85 45                   | DAY TK T-111A BACK UP    | 33.4.2        |
| LS 4911 B  | LEVEL SWITCH            | BARTON       | 288A        | T 86 45                   | DAY TK T-111B BACK UP    | 33.4.2        |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT         | MANUFACTURER | MODEL   | LOCATION<br>#BLDG./RM/ELV | SERVICE             | EQS<br>NUMBER |
|------------|-------------------|--------------|---------|---------------------------|---------------------|---------------|
| LS 5201 C  | LEVEL SWITCH      | ROCHESTER    | ET-1214 | T 90 45                   | CNDS STOR TK LVL    | MILD          |
| LS 5265    | LEVEL SWITCH      | ROCHESTER    | ET-1214 | T 90 45                   | CNDS STOR TK LVL    | MILD          |
| LT 185     | LEVEL TRANSMITTER | BARTON       | 345     | F 254 41                  | VCT LVL             | EXEMPT        |
| LT 459     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSB 66                 | PZR LVL             | 38.4.2        |
| LT 460     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSB 60                 | PZR LVL             | 38.4.2        |
| LT 461     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSB 66                 | PZR LVL             | 38.4.2        |
| LT 501     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 48                 | STM GEN LP 1 LEVEL  | 38.4.2        |
| LT 502     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 48                 | STM GEN LP 2 LEVEL  | 38.4.2        |
| LT 503     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 48                 | STM GEN LP 3 LEVEL  | 38.4.2        |
| LT 504     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 48                 | STM GEN LP 4 LEVEL  | 38.4.2        |
| LT 517     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 1 CHAN D | 38.4.2        |
| LT 518     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 1 CHAN C | 38.4.2        |
| LT 519     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 1 CHAN B | 38.4.2        |
| LT 527     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 2 CHAN D | 38.4.2        |
| LT 528     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 2 CHAN C | 38.4.2        |
| LT 529     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 2 CHAN A | 38.4.2        |
| LT 537     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 3 CHAN D | 38.4.2        |
| LT 538     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 3 CHAN C | 38.4.2        |
| LT 539     | LEVEL TRANSMITTER | BARTON       | 764     | C OBSF 45                 | STM GEN LP 3 CHAN A | 38.4.2        |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT         | MANUFACTURER        | MODEL     | LOCATION<br>*BLDG./RM/ELV | SERVICE                 | EQS<br>NUMBER |
|------------|-------------------|---------------------|-----------|---------------------------|-------------------------|---------------|
| LT 547     | LEVEL TRANSMITTER | BARTON              | 764       | C OBSF 45                 | STM GEN LP 4 CHAN D     | 38.4.2        |
| LT 548     | LEVEL TRANSMITTER | BARTON              | 764       | C OBSF 45                 | STM GEN LP 4 CHAN C     | 38.4.2        |
| LT 549     | LEVEL TRANSMITTER | BARTON              | 764       | C OBSF 45                 | STM GEN LP 4 CHAN B     | 38.4.2        |
| LT 893     | LEVEL TRANSMITTER | BARTON/WESTINGHOUSE | 752       | A 209 77                  | RVLIS LVL XMTR          | MILD          |
| LT 894     | LEVEL TRANSMITTER | BARTON              | 752       | A 209 77                  | RVLIS LVL XMTR          | MILD          |
| LT 895     | LEVEL TRANSMITTER | BARTON              | 752       | A 209 77                  | RVLIS LVL XMTR          | MILD          |
| LT 913     | LEVEL TRANSMITTER | BARTON              | 752       | A 203 61                  | RVLIS LVL XMTR          | MILD          |
| LT 914     | LEVEL TRANSMITTER | BARTON              | 752       | A 203 61                  | RVLIS LVL XMTR          | MILD          |
| LT 915     | LEVEL TRANSMITTER | BARTON              | 752       | A 203 61                  | RVLIS LVL XMTR          | MILD          |
| LT 1898    | LEVEL TRANSMITTER | BARTON              | 386       | O OUT 45                  | RWST LVL                | MILD          |
| LT 1899    | LEVEL TRANSMITTER | BARTON              | 386       | O OUT 45                  | REFUEL WTR STOR TK LVL  | MILD          |
| LT 1900    | LEVEL TRANSMITTER | BARTON              | 386       | O OUT 45                  | REFUEL WTR STOR TK LVL  | MILD          |
| LT 1901    | LEVEL TRANSMITTER | BARTON              | 386       | O OUT 45                  | REFUEL WTR STOR TK LVL  | MILD          |
| LT 2069 A  | LEVEL TRANSMITTER | FISHER/PORTER       | 1302493   | A 143 25                  | SODIUM HYDROXIDE TK LVL | EXEMPT        |
| LT 2069 B  | LEVEL TRANSMITTER | FISHER/PORTER       | 1302493   | A 143 25                  | SODIUM HYDROXIDE TK LVL | EXEMPT        |
| LT 4208 A1 | LEVEL TRANSMITTER | BARTON              | 764       | C OBSB 58                 | WTR LVL NARROW RNG      | 38.4.2        |
| LT 4208 A2 | LEVEL TRANSMITTER | BARTON/WESTINGHOUSE | 764(LOT4) | C OBSB 58                 | WTR LVL WIDE RNG        | 53.4.2        |
| LT 4208 B1 | LEVEL TRANSMITTER | BARTON/WESTINGHOUSE | 764(LOT4) | C OBSB 58                 | WTR LVL NARROW RNG      | 53.4.2        |
| LT 4208 B2 | LEVEL TRANSMITTER | BARTON              | 764       | C OBSB 58                 | WTR LVL WIDE RNG        | 38.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER        | MODEL      | LOCATION<br>*BLDG./RM/ELV | SERVICE                      | EQS<br>NUMBER |
|------------|----------------------|---------------------|------------|---------------------------|------------------------------|---------------|
| LT 4900 A  | LEVEL TRANSMITTER    | FISHER/GOVERNOR CO. | 2340-349BP | O OUT 45                  | DSL OIL STOR T-119A          | MILD          |
| LT 4900 B  | LEVEL TRANSMITTER    | FISHER/GOVERNOR CO. | 2340-349BP | O OUT 45                  | DSL OIL STOR T-119B          | MILD          |
| LT 5201    | LEVEL TRANSMITTER    | ITT BARTON          | 764        | O OUT 45                  | CNDS STOR TK LVL/AFNP TRIP   | 38.4.2        |
| LT 5265    | LEVEL TRANSMITTER    | ITT BARTON          | 764        | O OUT 45                  | CNDS STOR TK LVL/AFNP TRIP   | 38.4.2        |
| MF 101 A   | MOTOR                | WESTINGHOUSE        | SBDP       | O OUT 45                  | SW SYS STR                   | 43.4.2        |
| MF 101 B   | MOTOR                | WESTINGHOUSE        | SBDP       | O OUT 45                  | SW SYS STR                   | MILD          |
| MFCV 610   | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-00     | A 127 5                   | RHR RECIRC                   | EXEMPT        |
| MFCV 611   | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-00     | A 122 5                   | RHR RECIRC                   | EXEMPT        |
| MO 112 B   | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-00     | P 167 45                  | VCT DISCH                    | EXEMPT        |
| MO 112 C   | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-00     | P 167 45                  | VCT DISCH                    | EXEMPT        |
| MO 112 D   | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-0      | A 153 25                  | CCP SPLY FROM RWST           | EXEMPT        |
| MO 112 E   | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-0      | A 153 25                  | CCP SPLY FROM RWST           | EXEMPT        |
| MO 2050 A  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-00     | A 122 5                   | REFUELING WTR TO CNT SPRY SY | EXEMPT        |
| MO 2050 B  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-00     | A 130 5                   | REFUELING WTR TO CNT SPRY SY | EXEMPT        |
| MO 2052 A  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-2      | P 170 45                  | CNT SPRAY PMP A SUCT         | EXEMPT        |
| MO 2052 B  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-2      | P 169 45                  | CNT SPRAY PMP B SUCT         | EXEMPT        |
| MO 2053 A  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-1      | P 170 45                  | CNT SPRAY RING HDR 1 INLET   | EXEMPT        |
| MO 2053 B  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-1      | P 219 77                  | CNT SPRAY RING HDR 2 INLET   | EXEMPT        |
| MO 2056 A  | MOTOR OPERATED VALVE | LIMITORQUE          | SMB-000    | A 143 25                  | SPRAY ADDITIVE EDUC SUCT     | EXEMPT        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL     | LOCATION<br>#BLDG./RM/ELV | SERVICE                       | EQS<br>NUMBER |
|------------|----------------------|--------------|-----------|---------------------------|-------------------------------|---------------|
| MO 2056 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000   | A 143                     | 25 SPRAY ADDITIVE EDUC SUCT   | EXEMPT        |
| MO 2069 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3     | C 085B                    | 54 RECIRC SUMP                | 1.4.2         |
| MO 2069 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3     | C 085B                    | 54 RECIRC SUMP                | 1.4.2         |
| MO 2808    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | M 349                     | 56 STM GEN D BLDW#N           | 46.4.2        |
| MO 2810    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | M 349                     | 56 STM GEN A BLDW#N           | 46.4.2        |
| MO 2812    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | M 349                     | 56 STM GEN C BLDW#N           | 46.4.2        |
| MO 2813    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | M 349                     | 56 STM GEN B BLDW#N           | 46.4.2        |
| MO 2947 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0     | M 440                     | 61 ST UP FDM PMP P182 DISCH   | EXEMPT        |
| MO 2947 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0     | M 438                     | 61 ST UP FDM PMP P182 DISCH   | EXEMPT        |
| MO 3045 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00-10 | T 91                      | 47 SW TO AFM PMP A SUCT       | MILD          |
| MO 3045 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00-10 | T 90                      | 47 SW TO DSL AFM PMP B SUCT   | MILD          |
| MO 3060 C  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000   | T 90                      | 45 SW TO AFM PMP B CRCLT      | MILD          |
| MO 3071    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000   | T 91                      | 45 TURBINE TRIP & THROT VALVE | MILD          |
| MO 3170    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000   | T 91                      | 45 AFM PMP TURB DRVR CONT     | MILD          |
| MO 3210 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000   | A 149                     | 25 CCW ISL FROM RHR HX E-212A | 46.4.2        |
| MO 3210 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | A 148                     | 25 CCW ISL FROM RHR HX E-212B | EXEMPT        |
| MO 3290    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | P 168                     | 45 CCW ISL-CLASS I(CNT)       | 46.4.2        |
| MO 3291    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | P 219                     | 77 CCW ISL-CLASS I(CNT)       | 46.4.2        |
| MO 3292    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00    | P 219                     | 77 CCW ISL-CLASS I(CNT)       | 46.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL   | LOCATION<br>*BLDG./RM/ELV | SERVICE                         | EQS<br>NUMBER |
|------------|----------------------|--------------|---------|---------------------------|---------------------------------|---------------|
| MO 3293    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | C OBSB 81                 | TRAIN A CNT AIR CLR CLG WTR     | 45.4.2        |
| MO 3294    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C IBS 77                  | CCW TO RCP LO COOLER, LET DN HX | 1.4.2         |
| MO 3296    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | C IBS 77                  | CCW TO RCP LO COOLER, LET DN HX | 1.4.2         |
| MO 3300    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C IBS 77                  | CCW FM RCP LO COOLER, LET DN HX | 1.4.2         |
| MO 3301 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 81                 | CCW TO CNT AIR CLR 201A         | 1.4.2         |
| MO 3301 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 70                 | CCW TO CNT AIR CLR 201B         | 1.4.2         |
| MO 3302 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C IBSA 81                 | CCW TO CNT AIR CLR 201A         | 1.4.2         |
| MO 3302 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 69                 | CCW TO CNT AIR CLR 201B         | 1.4.2         |
| MO 3305 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 81                 | CCW TO CNT AIR CLR 202A         | 1.4.2         |
| MO 3305 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 70                 | CCW TO CNT AIR CLR 202B         | 1.4.2         |
| MO 3306 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 77                 | CCW FROM CNT AIR CLR 202A       | 1.4.2         |
| MO 3306 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 69                 | CCW FROM CNT AIR CLR 202B       | 1.4.2         |
| MO 3309 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 81                 | CCW TO CNT AIR CLR 203A         | 1.4.2         |
| MO 3309 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 70                 | CCW TO CNT AIR CLR 203B         | 1.4.2         |
| MO 3310 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C IBSA 81                 | CCW FROM CNT AIR CLR 203A       | 1.4.2         |
| MO 3310 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 69                 | CCW FROM CNT AIR CLR 204B       | 1.4.2         |
| MO 3313 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 81                 | CCW TO CNT AIR CLR 204A         | 1.4.2         |
| MO 3313 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 70                 | CCW TO CNT AIR CLR 204B         | 1.4.2         |
| MO 3314 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C OBSB 81                 | CCW FROM CNT AIR CLR 204A       | 1.4.2         |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL          | LOCATION<br>*BLDG./RM/ELV | SERVICE                         | EQS<br>NUMBER |
|------------|----------------------|--------------|----------------|---------------------------|---------------------------------|---------------|
| MO 3314 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00         | C OBSB 69                 | CCW FROM CNT AIR CLR 203B       | 1.4.2         |
| MO 3320    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C IBS 77                  | CCW FM RCP LO COOLER, LET DN HX | 1.4.2         |
| MO 3346    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00         | P 168 45                  | CCW ISL-CLASS I(CNT)            | 46.4.2        |
| MO 3347    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000-5/40BC | C OBSB 62                 | TRAIN B CAC CLG HTR             | 45.4.2        |
| MO 4005    | MOTOR OPERATED VALVE | ROTORK       | 11 NAT 1       | C OBSF 42                 | REAC COOL DR TK OUT             | 16.4.2        |
| MO 4180    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C OBSF 50                 | CNT SUMP PMP DISCH              | 45.4.2        |
| MO 4300    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C OBSB 63                 | RAACT GAS CLTG HDR              | 45.4.2        |
| MO 4903 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | T 85 45                   | INL TO T-111A                   | MILD          |
| MO 4903 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | T 86 45                   | INL TO T-111B                   | MILD          |
| MO 4907 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | T 90 45                   | FR T-119A TO T-152              | MILD          |
| MO 4907 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | T 90 45                   | FR T-119B TO T-152              | MILD          |
| MO 5651 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C OBSB 55                 | ACCUM T205A SMPL ISLN VLV       | 45.4.2        |
| MO 5651 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C OBSB 55                 | ACCUM T205B SMPL ISLN VLV       | 45.4.2        |
| MO 5651 C  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C OBSB 55                 | ACCUM T205C SMPL ISLN VLV       | 45.4.2        |
| MO 5651 D  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C OBSB 55                 | ACCUM T205D SMPL ISLN VLV       | 45.4.2        |
| MO 5653    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C IBSA 54                 | RCS HOT LEG TO SMPL SYS         | 45.4.2        |
| MO 5654    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C IBSA 54                 | RCS HOT LEG TO SMPL SYS         | 45.4.2        |
| MO 5656    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C IBSA 54                 | PRSRZ TO SMPL SYS               | 45.4.2        |
| MO 5658    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000        | C IBSA 54                 | PRSRZ TO SMPL SYS               | 45.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL   | LOCATION<br>*BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|----------------------|--------------|---------|---------------------------|--------------------------------|---------------|
| MO 5660    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | C 1BSA 59                 | RCDT SMPL TO AUTO GAS ANAL     | 45.4.2        |
| MO 5663    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | A 226 93                  | CNT VENT RAD MON SPLY          | 46.4.2        |
| MO 5671    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | A 226 93                  | CNT VENT RAD MON RTN           | 46.4.2        |
| MO 5672    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | C 0BSA 96                 | CNT VENT RAD MON & H2 ANAL RTN | 45.4.2        |
| MO 5673    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | C 09SA 93                 | CNT VENT RAD MON SPLY          | 45.4.2        |
| MO 5674    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | C 0BSB 62                 | H2 ANAL SPLY                   | 45.4.2        |
| MO 5675    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | P 168 45                  | H2 ANAL SPLY                   | 46.4.2        |
| MO 5676    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | P 168 45                  | H2 ANAL RTN                    | 46.4.2        |
| MO 5677    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | A 226 93                  | H2 ANAL SPLY                   | 46.4.2        |
| MO 5678    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | A 226 93                  | H2 ANAL RTN                    | 46.4.2        |
| MO 6716    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | M 438 62                  | STM GEN A BLDWN                | 46.4.2        |
| MO 6717    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | M 437 59                  | STM GEN B BLDWN                | 46.4.2        |
| MO 6718    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | M 436 64                  | STM GEN C BLDWN                | 46.4.2        |
| MO 6719    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-000 | M 436 62                  | STM GEN D BLDWN                | 46.4.2        |
| MO 8000 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C PRZR 77                 | PRSRZ TO PRSRZ RELIEF TK       | 45.4.2        |
| MO 8000 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | C PRZR 77                 | PRSRZ TO PRSRZ RELIEF TK       | 45.4.2        |
| MO 8100    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | P 189 61                  | RCP SEAL WTR RETURN ISLN       | EXEMPT        |
| MO 8105    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | P 185 63                  | RCS CHARGING LN ISLN           | EXEMPT        |
| MO 8106    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00  | P 185 63                  | RCS CHARGING LINE ISOLATION    | EXEMPT        |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL  | LOCATION<br>#BLDG./RM/ELV |    | SERVICE                   | EQS<br>NUMBER |
|------------|----------------------|--------------|--------|---------------------------|----|---------------------------|---------------|
| MO 8110    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 151                     | 25 | CHG PMP MIN FL LN ISLN    | EXEMPT        |
| MO 8111    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 151                     | 25 | CHG PMP MIN FL LN ISLN    | EXEMPT        |
| MO 8112    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | C 0858                    | 67 | RCP SEAL WTR RETURN ISLN  | 45.4.2        |
| MO 8700 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | A 125                     | 5  | RHR PMP A SUCT            | EXEMPT        |
| MO 8700 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | A 123                     | 5  | RHR PMP B SUCT            | EXEMPT        |
| MO 8703    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-2  | P 168                     | 45 | RHR HOT LEG INJN          | 1.4.2         |
| MO 8716 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-2  | A 127                     | 5  | HOT LEG INJN FROM TRAIN A | NCR-86-132    |
| MO 8716 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-2  | A 122                     | 5  | HOT LEG INJN FROM TRAIN B | NCR-86-132    |
| MO 8801 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | P 168                     | 45 | BIT DISCH                 | 46.4.2        |
| MO 8801 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | P 168                     | 45 | BIT DISCH                 | 46.4.2        |
| MO 8802 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | P 185                     | 63 | SI TO HOT LEG 2 & 4       | 46.4.2        |
| MO 8802 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | P 185                     | 63 | SI TO HOT LEG 1 & 3       | 46.4.2        |
| MO 8803 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | A 141                     | 25 | BIT INL                   | 46.4.2        |
| MO 8803 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | A 141                     | 25 | BIT INL                   | 46.4.2        |
| MO 8804 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-2  | A 127                     | 5  | RHR HX A OUT TO CHARG PPS | NCR-86-132    |
| MO 8804 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-2  | A 122                     | 5  | RHR HX B OUT TO SI PPS    | NCR-86-132    |
| MO 8806    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | A 121                     | 5  | SI PMP SUCT               | EXEMPT        |
| MO 8807 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 121                     | 5  | SIP/CCP SUCT              | NCR-86-132    |
| MO 8807 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 121                     | 5  | SIP/CCP SUCT              | NCR-86-132    |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL  | LOCATION<br>*BLDG /RM/ELV |    | SERVICE                      | EQS<br>NUMBER |
|------------|----------------------|--------------|--------|---------------------------|----|------------------------------|---------------|
| MO 8809 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | P 170                     | 45 | RHR COLD LEG INJN            | NCR-86-132    |
| MO 8809 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | P 169                     | 45 | RHR COLD LEG INJN            | NCR-86-132    |
| MO 8811 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | P 170                     | 45 | RHR TRAIN A CNT SUMP ISLN    | EXEMPT        |
| MO 8811 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | P 169                     | 45 | RHR TRAIN B CNT SUMP ISLN    | EXEMPT        |
| MO 8812    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-3  | A 141                     | 25 | RHR PMP SUCT                 | EXEMPT        |
| MO 8813    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 148                     | 25 | SI PMP MIN FL LN ISLN        | EXEMPT        |
| MO 8814    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 148                     | 25 | SI PMP MIN FL LN ISLN        | EXEMPT        |
| MO 8821 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | P 185                     | 63 | SI PMP A DISCH TO RCS CLD LG | 46.4.2        |
| MO 8821 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | P 185                     | 63 | SI PMP B DISCH TO RCS CLD LG | 46.4.2        |
| MO 8835    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-0  | P 185                     | 63 | COLD LEG SI                  | 46.4.2        |
| MO 8923 A  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 121                     | 5  | SI PMP A SUCT BLK VLV        | NCR-86-132    |
| MO 8923 B  | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 121                     | 5  | SI PMP B SUCT BLK VLV        | NCR-86-132    |
| MO 8924    | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | A 127                     | 5  | CHARGING PMP TO SI PMP SUCT  | NCR-86-132    |
| MO 10005   | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | E 358                     | 82 | H2 VENT SPLY                 | 45.4.2        |
| MO 10006   | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | E 358                     | 82 | H2 VENT SPLY                 | 45.4.2        |
| MO 10007   | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | C OBSB                    | 78 | H2 VENT SPLY                 | 45.4.2        |
| MO 10008   | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | C OBSB                    | 78 | H2 VENT SPLY                 | 45.4.2        |
| MO 10009   | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | C OBSB                    | 77 | H2 VENT EXH                  | 45.4.2        |
| MO 10010   | MOTOR OPERATED VALVE | LIMITORQUE   | SMB-00 | C OBSB                    | 59 | H2 VENT EXH                  | 45.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER   | MODEL       | LOCATION<br>*BLDG./RM/ELV |    | SERVICE                    | EQS<br>NUMBER |
|------------|----------------------|----------------|-------------|---------------------------|----|----------------------------|---------------|
| MO 10011   | MOTOR OPERATED VALVE | LIMITORQUE     | SMB-00      | P 168                     | 45 | H2 VENT EXH                | 45.4.2        |
| MO 10012   | MOTOR OPERATED VALVE | LIMITORQUE     | SMB-00      | P 168                     | 45 | H2 VENT EXH                | 45.4.2        |
| MO 10013   | MOTOR OPERATED VALVE | LIMITORQUE     | SMB-000     | C OBSB                    | 81 | CHLD MTR RTN               | 45.4.2        |
| MO 10016   | MOTOR OPERATED VALVE | LIMITORQUE     | SMB-000     | C OBSB                    | 81 | CHLD MTR SPLY              | 45.4.2        |
| MP 108 A   | MOTOR                | WESTINGHOUSE   | VSH1        | I 394                     | 23 | SW PMP A                   | MILD          |
| MP 108 B   | MOTOR                | WESTINGHOUSE   | VSH1        | I 394                     | 23 | SW PMP B                   | MILD          |
| MP 108 C   | MOTOR                | WESTINGHOUSE   | VSH1        | I 394                     | 25 | SW PMP C                   | MILD          |
| MP 144 A   | MOTOR                | CRANE CO.      |             | O OUT                     | 45 | DSL OIL PMP FOR T-119A     | MILD          |
| MP 144 B   | MOTOR                | CRANE CO.      |             | O OUT                     | 45 | DSL OIL PMP FOR T-11/B     | MILD          |
| MP 148 A   | MOTOR                | ALLIS-CHALMERS | 142         | A 164                     | 45 | SW BSTR PMP A              | EXEMPT        |
| MP 148 B   | MOTOR                | ALLIS-CHALMERS | 142         | A 164                     | 45 | SW BSTR PMP B              | EXEMPT        |
| MP 148 C   | MOTOR                | ALLIS-CHALMERS | 142         | A 164                     | 45 | SW BSTR PMP C              | EXEMPT        |
| MP 148 D   | MOTOR                | ALLIS-CHALMERS | 142         | A 164                     | 45 | SW BSTR PMP D              | EXEMPT        |
| MP 168     | MOTOR                | BALDOR         | 27384-11925 | T 90                      | 45 | DSL AFW L O PMP SPD INCRSR | MILD          |
| MP 202 A   | MOTOR                | WESTINGHOUSE   | VSHI        | A 127                     | 5  | RHR PMP P202A              | 23.4.2/9.4.10 |
| MP 202 B   | MOTOR                | WESTINGHOUSE   | VSHI        | A 122                     | 5  | RHR PMP P202B              | 23.4.2/9.4.10 |
| MP 203 A   | MOTOR                | WESTINGHOUSE   | HSDP        | A 121                     | 5  | SI PMP 203A                | 23.4.2/9.4.10 |
| MP 203 B   | MOTOR                | WESTINGHOUSE   | HSDP        | A 120                     | 5  | SI PMP 203B                | 23.4.2/9.4.10 |
| MP 204 A   | MOTOR                | ALLIS CHALMERS | TYPE GV     | A 129                     | 10 | CNT SPRAY PMP P204A        | 22.4.2/9.4.10 |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT | MANUFACTURER   | MODEL   | LOCATION<br>*BLDG./RM/ELV | SERVICE               | EQS<br>NUMBER |
|------------|-----------|----------------|---------|---------------------------|-----------------------|---------------|
| MP 204 B   | MOTOR     | ALLIS CHALMERS | TYPE GV | A 130 5                   | CNT SPRAY PMP P204B   | 22.4.2/9.4.10 |
| MP 205 A   | MOTOR     | WESTINGHOUSE   | HSDP    | A 153 25                  | CNTFGL CHG PMP P205A  | 23.4.2/9.4.10 |
| MP 205 B   | MOTOR     | WESTINGHOUSE   | HSDP    | A 156 25                  | CNTFGL CHG PMP P205B  | 23.4.2/9.4.10 |
| MP 210 A   | MOTOR     | ALLIS-CHALMERS | 142     | F 228 45                  | CCW PMP TRAIN A       | EXEMPT        |
| MP 210 B   | MOTOR     | ALLIS-CHALMERS | 142     | F 228 45                  | CCW PMP TRAIN B       | EXEMPT        |
| MP 210 C   | MOTOR     | ALLIS-CHALMERS | 142     | A 164 45                  | CCW PMP TRAIN A/B     | EXEMPT        |
| MP 218 A   | MOTOR     | ALLIS-CHALMERS | RCV     | F 228 45                  | CCW MKUP PMP TRAIN A  | EXEMPT        |
| MP 218 B   | MOTOR     | ALLIS-CHALMERS | RCV     | F 228 45                  | CCW MKUP PMP TRAIN B  | EXEMPT        |
| MP 221 A   | MOTOR     | WESTINGHOUSE   | SBDP    | A 153 25                  | CCPA AUX LUB OIL      | 43.4.2        |
| MP 221 B   | MOTOR     | WESTINGHOUSE   | SBDP    | A 156 25                  | CCPB AUX LUB OIL      | 43.4.2        |
| MV 143 A   | MOTOR     | WESTINGHOUSE   | SBDP    | C 45 77                   | CABLE SPREADING RM    | 43.4.2        |
| MV 143 B   | DR        | WESTINGHOUSE   | SBDP    | C 45 77                   | CABLE SPREADING RM    | 43.4.2        |
| MV 143 C   | MOTOR     | WESTINGHOUSE   | SBDP    | C 45 77                   | CABLE SPREADING RM    | 43.4.2        |
| MV 143 D   | MOTOR     | WESTINGHOUSE   | SBDP    | C 45 77                   | CABLE SPREADING RM    | 43.4.2        |
| MV 143 E   | MOTOR     | WESTINGHOUSE   | SBDP    | C 45 77                   | CABLE SPREADING RM    | 43.4.2        |
| MV 143 F   | MOTOR     | WESTINGHOUSE   | SBDP    | C 45 77                   | CABLE SPREADING RM    | 43.4.2        |
| MV 145 A   | MOTOR     | WESTINGHOUSE   | TBDP    | C 38 65                   | CONT BLDG ELEC AUX RM | MILD          |
| MV 145 B   | MOTOR     | WESTINGHOUSE   | TBDP    | C 34 61                   | CONT BLDG ELEC AUX RM | MILD          |
| MV 145 C   | MOTOR     | WESTINGHOUSE   | TBDP    | C 34 61                   | CONT BLDG ELEC AUX RM | MILD          |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT | MANUFACTURER | MODEL | LOCATION<br>*BLDG./RM/ELV |    | SERVICE                    | EQS<br>NUMBER |
|------------|-----------|--------------|-------|---------------------------|----|----------------------------|---------------|
| MV 145 D   | MOTOR     | WESTINGHOUSE | TBDP  | C 38                      | 61 | CONT BLDG ELEC AUX RM      | MILD          |
| MV 145 E   | MOTOR     | WESTINGHOUSE | TBDP  | C 38                      | 61 | CONT BLDG ELEC AUX RM      | MILD          |
| MV 163 A   | FAN MOTOR | WESTINGHOUSE | TBDP  | T 107                     | 69 | SHGR RM CLG UNIT           | MILD          |
| MV 163 B   | FAN MOTOR | WESTINGHOUSE | TBDP  | T 107                     | 69 | SHGR RM CLG UNIT           | MILD          |
| MV 163 C   | FAN MOTOR | WESTINGHOUSE | TBDP  | T 107                     | 69 | SHGR RM CLG UNIT           | MILD          |
| MV 164     | FAN MOTOR | WESTINGHOUSE | TBDP  | T 107                     | 69 | SHGR RM CLG UNIT           | MILD          |
| MV 251 A   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 153                     | 25 | CENT CHARGING PMP A RM CLR | 63.4.2/9.4.8  |
| MV 251 B   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 156                     | 25 | CENT CHARGING PMP B RM CLR | 63.4.2/9.4.8  |
| MV 252 A   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 129                     | 5  | CNT SPRAY PMP A RM CLR     | 63.4.2/9.4.8  |
| MV 252 B   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 130                     | 5  | CNT SPRAY PMP B RM CLR     | 63.4.2/9.4.8  |
| MV 253 A   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 123                     | 5  | RHR PMP A RM CLR           | 63.4.2/9.4.8  |
| MV 253 B   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 125                     | 5  | RHR PMP B RM CLR           | 63.4.2/9.4.8  |
| MV 254 A   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 121                     | 5  | SIS PMP A RM CLR           | 63.4.2/9.4.8  |
| MV 254 B   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 120                     | 5  | SIS PMP B RM CLR           | 63.4.2/9.4.8  |
| MV 256 A   | FAN MOTOR | WESTINGHOUSE | SBDP  | F 220                     | 45 | CCW PMP A CLR              | 43.4.2        |
| MV 256 B   | FAN MOTOR | WESTINGHOUSE | SBDP  | F 228                     | 45 | CCW PMP B CLR              | 43.4.2        |
| MV 256 C   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 164                     | 45 | CCW PMP C CLR              | 43.4.2        |
| MV 304 A   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 164                     | 45 | SW BSTR PMPs A & C CLR     | MILD          |
| MV 304 B   | FAN MOTOR | WESTINGHOUSE | SBDP  | A 164                     | 45 | SW BSTR PMPs B & D CLR     | MILD          |

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Amendment 5  
(August 1988)

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT | MANUFACTURER | MODEL         | LOCATION<br>#BLDG./RM/ELV |     | SERVICE                   | EQS<br>NUMBER |
|------------|-----------|--------------|---------------|---------------------------|-----|---------------------------|---------------|
| MVC 131 A  | MOTOR     | RELIANCE     | TYPE P        | T 85                      | 45  | DIESEL GEN EXH FAN        | MILD          |
| MVC 131 B  | MOTOR     | RELIANCE     | TYPE P        | T 85                      | 45  | DSL GEN EXH FAN           | MILD          |
| MVC 132 A  | MOTOR     | RELIANCE     | TYPE P        | T 86                      | 45  | DSL GEN EXH FAN           | MILD          |
| MVC 132 B  | MOTOR     | RELIANCE     | TYPE P        | T 86                      | 45  | DSL GEN EXH FAN           | MILD          |
| MVC 142 A  | MOTOR     | WESTINGHOUSE | SBDP          | C 77                      | 105 | CTRL RM RECIRC FAN, CB-1  | MILD          |
| MVC 142 B  | MOTOR     | WESTINGHOUSE | SBDP          | C 77                      | 105 | CNTR RM RECIRC FAN, CB-1  | MILD          |
| MVC 146 A  | MOTOR     | GE           | 61109-11722   | C 38                      | 65  | BTRY RM EXH FAN, CB-7     | MILD          |
| MVC 146 B  | MOTOR     | GE           | 61109-11722   | C 38                      | 65  | BTRY RM EXH FAN, CB-7     | MILD          |
| MVC 161    | MOTOR     | RELIANCE     | TYPE P        | T 85                      | 45  | DSL GEN CLG FAN           | MILD          |
| MVC 162    | MOTOR     | RELIANCE     | TYPE P        | T 86                      | 45  | DSL GEN CLG FAN           | MILD          |
| MVC 165    | MOTOR     | RELIANCE     | 4Y265908A1-LY | M ROOF                    | 93  | AFW PMP CLG FAN           | MILD          |
| MVC 166    | MOTOR     | RELIANCE     | TYPE P        | T 91                      | 45  | AFW PMP CLG FAN           | MILD          |
| MVC 167    | MOTOR     | RELIANCE     | TYPE P        | T 87                      | 45  | DIESEL AFW PMP RM CLG FAN | 88.4.2        |
| MVC 168    | MOTOR     | RELIANCE     | TYPE P        | T 89                      | 45  | AFW PMP CLG FAN           | MILD          |
| MVC 181 A  | MOTOR     | RELIANCE     | 600288        | I ROOF                    | 45  | SW PMP RM FAN             | MILD          |
| MVC 181 B  | MOTOR     | RELIANCE     | 600288        | I ROOF                    | 45  | SW PMP RM FAN             | MILD          |
| MVC 201 A  | MOTOR     | RELIANCE     | 600287-2      | C OBSA                    | 205 | CNT AIR CLR VC201A        | 10.4.2        |
| MVC 201 B  | MOTOR     | RELIANCE     | 600287-2      | C OBSA                    | 205 | CNT AIR CLR VC201B        | 10.4.2        |
| MVC 202 A  | MOTOR     | RELIANCE     | 600287-2      | C OBSA                    | 205 | CNT AIR CLR VC202A        | 10.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT             | MANUFACTURER  | MODEL     | LOCATION<br>*BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER |
|------------|-----------------------|---------------|-----------|---------------------------|-----------------------------|---------------|
| MVC 202 B  | MOTOR                 | RELIANCE      | 600287-2  | C OBSA 205                | CNT AIR CLR VC202B          | 10.4.2        |
| MVC 203 A  | MOTOR                 | RELIANCE      | 600287-2  | C OBSA 205                | CNT AIR CLR VC203A          | 10.4.2        |
| MVC 203 B  | MOTOR                 | RELIANCE      | 600287-2  | C OBSA 205                | CNT AIR CLR VC203B          | 10.4.2        |
| MVC 204 A  | MOTOR                 | RELIANCE      | 600287-2  | C OBSA 205                | CNT AIR CLR VC204A          | 10.4.2        |
| MVC 204 B  | MOTOR                 | RELIANCE      | 600287-2  | C OBSA 205                | CNT AIR CLR VC204B          | 10.4.2        |
| MVC 220 A  | MOTOR                 | RELIANCE      | 600287-3  | C OBSA 205                | H2 MXG FAN CHAN A           | 10.4.2        |
| MVC 220 B  | MOTOR                 | RELIANCE      | 600287-3  | C OBSA 205                | H2 MXG FAN CHAN B           | 10.4.2        |
| N 6991     | CONTROL STATION       | GE            | EB25A08B  | A 225 93                  | PERSONNEL AIR LOCK LEAK DET | 13.4.4        |
| N 6992     | CONTROL STATION       | GE            | EB25A08B  | A 225 93                  | PERSONNEL AIR LOCK LEAK DET | 13.4.4        |
| NE 48      | NEUTRON FLUX DETECTOR | GAMMA METRICS | 200574113 | C IBSF 51                 | NEUTRON FLUX MONITOR        | 72.4.2        |
| NM 48      | AMPLIFIER             | GAMMA METRICS | 900113101 | C 36 61                   | NEUTRON FLUX MONITOR        | 72.4.2        |
| NTB 301    | SPLICE POINT          | RAYCHEM       | WCSF-N    | C OBSA 93                 | SV1015B & SV1016B           | 9.4.2         |
| NTB 302    | SPLICE POINT          | RAYCHEM       | WCSF-N    | C OBSA 93                 | SV1015A & SV1016A           | 9.4.2         |
| NTB 534    | TERMINAL BOARD        | BUCHANAN      | NQB108    | M 442 77                  | ZS-2216                     | 17.4.2        |
| NTB 535    | TERMINAL BOARD        | BUCHANAN      | NQB108    | M 442 82                  | ZS-2216                     | 17.4.2        |
| NTB 536    | TERMINAL BOARD        | BUCHANAN      | NQB108    | M 443 77                  | ZS-2276                     | 17.4.2        |
| NTB 537    | TERMINAL BOARD        | BUCHANAN      | NQB108    | M 444 82                  | ZS-2256                     | 17.4.2        |
| NTB 538    | TERMINAL BOARD        | BUCHANAN      | NQB108    | M 444 82                  | ZS-2256                     | 17.4.2        |
| NTB 539    | TERMINAL BOARD        | BUCHANAN      | NQB108    | M 443 82                  | ZS-2276                     | 17.4.2        |

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T A B L E 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT        | MANUFACTURER  | MODEL       | LOCATION<br>#BLDG./RM/ELV | SERVICE                    | EQS<br>NUMBER |
|------------|------------------|---------------|-------------|---------------------------|----------------------------|---------------|
| NTB 540    | TERMINAL BOARD   | BUCHANAN      | NB106       | M 445                     | 82 ZS-2236                 | 17.4.2        |
| NY 48      | SIGNAL PROCESSOR | GAMMA METRICS | 900114101   | C 36                      | 51 NEUTRON FLUX MONITOR    | 72.4.2        |
| NZ 02      | PENETRATION      | AMPHENOL      | 50003326-10 | C OBSB                    | 73 H.V. POWER              | 8.4.2         |
| NZ 04      | PENETRATION      | AMPHENOL      | 50003326-11 | C OBSB                    | 73 L.V. POWER              | 8.4.2         |
| NZ 05      | PENETRATION      | AMPHENOL      | 50003326-11 | C OBSB                    | 73 L.V. POWER              | 8.4.2         |
| NZ 06      | PENETRATION      | AMPHENOL      | 50003326-11 | C OBSB                    | 73 L.V. POWER              | 8.4.2         |
| NZ 07      | PENETRATION      | AMPHENOL      | 50003326-11 | C OBSB                    | 73 L.V. POWER              | 8.4.2         |
| NZ 08      | PENETRATION      | AMPHENOL      | 50003326-12 | C OBSB                    | 73 L.V. POWER              | 8.4.2         |
| NZ 09      | PENETRATION      | AMPHENOL      | 50003326-10 | C OBSB                    | 73 H.V. POWER              | 8.4.2         |
| NZ 10      | PENETRATION      | AMPHENOL      | 50003326-10 | C OBSB                    | 73 H.V. POWER              | 8.4.2         |
| NZ 11      | PENETRATION      | AMPHENOL      | 50003326-10 | C OBSB                    | 73 H.V. POWER              | 8.4.2         |
| NZ 12      | PENETRATION      | AMPHENOL      | 50003326-13 | C OBSB                    | 66 L.V. POWER              | 8.4.2         |
| NZ 13      | PENETRATION      | AMPHENOL      | 50003326-13 | C OBSB                    | 66 L.V. POWER              | 8.4.2         |
| NZ 14      | PENETRATION      | AMPHENOL      | 50003326-14 | C OBSB                    | 66 L.V. POWER              | 8.4.2         |
| NZ 15      | PENETRATION      | AMPHENOL      | 50003326-14 | C OBSB                    | 66 L.V. POWER              | 8.4.2         |
| NZ 17      | PENETRATION      | AMPHENOL      | 50003326-15 | C OBSB                    | 63 NUCLEAR INSTRUMENTATION | 8.4.2         |
| NZ 18      | PENETRATION      | AMPHENOL      | 50003326-16 | C OBSB                    | 63 IN-CORE INSTRUMENTATION | 8.4.2         |
| NZ 19      | PENETRATION      | AMPHENOL      | 50003326-17 | C OBSB                    | 66 IN-CORE INSTRUMENTATION | 8.4.2         |
| NZ 20      | PENETRATION      | AMPHENOL      | 50003326-12 | C OBSB                    | 63 L.V. POWER              | 8.4.2         |

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TABLE 3-2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT         | MANUFACTURER    | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                    | EQS<br>NUMBER |
|-------------|-------------------|-----------------|-------------|---------------------------|----------------------------|---------------|
| NZ 21       | PENETRATION       | AMPHENOL        | 50003326-12 | C OBSB 57                 | L.V. POWER                 | 8.4.2         |
| NZ 22       | PENETRATION       | AMPHENOL        | 50003326-18 | C OBSB 57                 | L.V. POWER & CONTROL       | 8.4.2         |
| NZ 24       | PENETRATION       | AMPHENOL        | 50003326-19 | C OBSB 57                 | L.V. POWER                 | 8.4.2         |
| NZ 29       | PENETRATION       | AMPHENOL        | 50003326-17 | C OBSB 53                 | MISC INSTRUMENTATION       | 8.4.2         |
| NZ 30       | PENETRATION       | AMPHENOL        | 50003326-17 | C OBSB 53                 | CONT ATM TEMP              | 8.4.2         |
| NZ 31       | PENETRATION       | AMPHENOL        | 50003326-17 | C OBSB 66                 | IN-CORE INSTRUMENTATION    | 8.4.2         |
| PDIS 3702 A | PRESS DIFF SWITCH | NOT ACCESSIBLE  |             | O OUT 25                  | SM PMP DISCH HDR STNR DIFF | MILD          |
| PDIS 3702 B | PRESS DIFF SWITCH | NOT ACCESSIBLE  |             | O OUT 25                  | SM PMP DISCH STNR DIFF     | MILD          |
| PDS 3399 A  | PRESS DIFF SWITCH | BARTON          | 288A        | A 164 45                  | CCW PMP A DIFF PRESS       | EXEMPT        |
| PDS 3399 B  | PRESS DIFF SWITCH | BARTON          | 288A        | A 164 45                  | CCW PMP B DIFF PRESS       | EXEMPT        |
| PS 3072 C   | PRESSURE SWITCH   | ROCHESTER       | ET 1215     | T 89 45                   | AFW PP A SUCT PRESS        | MILD          |
| PS 3072 D   | PRESSURE SWITCH   | ROCHESTER       | ET 1215     | T 90 45                   | AFW PMP B SUCT PRESS       | MILD          |
| PS 3073 X   | PRESSURE SWITCH   | MERCOID CONTROL | DA33-804    | T 90 45                   | P102B SPEED INCREASER L O  | MILD          |
| PS 3701 A   | PRESSURE SWITCH   | MERCONTROL      | DA7033-804  | I 394 23                  | SW SYS PMP DISCH PRESS     | MILD          |
| PS 3701 B   | PRESSURE SWITCH   | MERCONTROL      | DA7033-804  | I 394 23                  | SHS PMP DISCH PRESS        | MILD          |
| PS 3711 A   | PRESSURE SWITCH   | MERCONTROL      | DA7033-804  | A 164 45                  | SW BSTR PMP                | EXEMPT        |
| PS 3711 B   | PRESSURE SWITCH   | MERCONTROL      | DA7033-804  | A 164 45                  | SW BSTR PMP                | EXEMPT        |
| PS 3711 C   | PRESSURE SWITCH   | MERCONTROL      | DA7033-804  | A 164 45                  | SW BSTR PMP                | EXEMPT        |
| PS 3711 D   | PRESSURE SWITCH   | MERCONTROL      | DA7033-804  | A 164 45                  | SW BSTR PMP                | EXEMPT        |

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TABLE 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER | MODEL         | LOCATION<br>*BLDG./RM/ELV | SERVICE               | EQS<br>NUMBER |
|------------|----------------------|--------------|---------------|---------------------------|-----------------------|---------------|
| PS 3745 A  | PRESSURE SWITCH      | MERCONTROL   | DA7033-153    | I 394 23                  | SW BSTR PMPS SUCT     | MILD          |
| PS 3745 B  | PRESSURE SWITCH      | MERCONTROL   | DA7033-153    | I 394 23                  | SW BSTR PMPS SUCT     | MILD          |
| PS 3745 C  | PRESSURE SWITCH      | MERCONTROL   | DA7033-153    | I 394 23                  | SW BSTR PMPS SUCT     | MILD          |
| PS 3745 D  | PRESSURE SWITCH      | MERCONTROL   | DA7033-153    | I 394 23                  | SW BSTR PMPS SUCT     | MILD          |
| PS 3844 A  | PRESSURE SWITCH      | MERCONTROL   | DA7033-153-R6 | A 164 45                  | SNBP DISCH            | EXEMPT        |
| PS 3844 B  | PRESSURE SWITCH      | MERCONTROL   | DA7033-153-R6 | A 164 45                  | SNBP DISCH            | EXEMPT        |
| PT 403     | PRESSURE TRANSMITTER | BARTON       | 763           | C OBSF 45                 | RCS WIDE RNG PRESS    | 37.4.2        |
| PT 405     | PRESSURE TRANSMITTER | BARTON       | 763           | C OBSF 45                 | RCS WIDE RNG PRESS    | 37.4.2        |
| PT 455     | PRESSURE TRANSMITTER | BARTON       | 763           | C OBSB 73                 | PRSRZ PRESS           | 37.4.2        |
| PT 456     | PRESSURE TRANSMITTER | BARTON       | 763           | C OBSB 73                 | PRSRZ PRESS           | 37.4.2        |
| PT 457     | PRESSURE TRANSMITTER | BARTON       | 763           | C OBSB 71                 | PRSRZ PRESS           | 37.4.2        |
| PT 458     | PRESSURE TRANSMITTER | BARTON       | 763           | C OBSB 72                 | PRSRZ PRESS           | 37.4.2        |
| PT 505     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G08       | T 102 63                  | TURB 1ST STAGE PRESS  | 40.4.2        |
| PT 506     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G08       | T 102 63                  | TURB 1ST STAGE PRESS  | 40.4.2        |
| PT 514     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G09       | T 103 63                  | LP 1 STM GEN CHAN A   | 40.4.2        |
| PT 515     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G09       | M 439 59                  | LOOP 1 STM GEN CHAN B | 40.4.2        |
| PT 516     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G09       | T 103 63                  | LOOP 1 STM GEN CHAN C | 40.4.2        |
| PT 524     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G09       | T 103 63                  | LOOP 2 STM GEN CHAN A | 40.4.2        |
| PT 525     | PRESSURE TRANSMITTER | ROSEMOUNT    | 1153G09       | M 440 59                  | LOOP 2 STM GEN CHAN B | 40.4.2        |

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07/26/88

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT            | MANUFACTURER        | MODEL         | LOCATION<br>#BLDG./RM/ELV | SERVICE               | EQS<br>NUMBER |
|------------|----------------------|---------------------|---------------|---------------------------|-----------------------|---------------|
| PT 526     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | T 103 63                  | LOOP 2 STM GEN CHAN C | 40.4.2        |
| PT 534     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | T 103 63                  | LOOP 3 STM GEN CHAN A | 40.4.2        |
| PT 535     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | M 440 59                  | LOOP 3 STM GEN CHAN B | 40.4.2        |
| PT 536     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | T 103 63                  | LOOP 3 STM GEN CHAN C | 40.4.2        |
| PT 544     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | T 103 63                  | LOOP 4 STM GEN CHAN A | 40.4.2        |
| PT 545     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | M 439 59                  | LOOP 4 STM GEN CHAN B | 40.4.2        |
| PT 546     | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153GD9       | T 103 63                  | LOOP 4 STM GEN CHAN C | 40.4.2        |
| PT 960     | PRESSURE TRANSMITTER | BARTON              | 763           | C OBSF 50                 | ACCUM TANK 1 PRESSURE | 37.4.2        |
| PT 963     | PRESSURE TRANSMITTER | BARTON              | 763           | C OBSF 50                 | ACCUM TANK 2 PRESSURE | 37.4.2        |
| PT 964     | PRESSURE TRANSMITTER | BARTON              | 393           | C OBSF 50                 | ACCUM TANK 3 PRESSURE | 37.4.2        |
| PT 967     | PRESSURE TRANSMITTER | BARTON              | 763           | C OBSF 50                 | ACCUM TANK 4 PRESSURE | 37.4.2        |
| PT 1028    | PRESSURE TRANSMITTER | BARTON/WESTINGHOUSE | 753           | A 203 61                  | RVLIS PRESS. XMTR     | EXEMPT        |
| PT 1029    | PRESSURE TRANSMITTER | BARTON/WESTINGHOUSE | 753           | A 209 77                  | RVLIS PRESS. XMTR     | EXEMPT        |
| PT 2071 A  | PRESSURE TRANSMITTER | FISHER/PORTER       | 50EP1071BCSBA | A 137 5                   | CNT SPRAY PMP A DISCH | MILD          |
| PT 2071 B  | PRESSURE TRANSMITTER | FISHER/PORTER       | 50EP1071BCSBA | A 137 5                   | CNT SPRAY PMP B DISCH | MILD          |
| PT 2080    | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153DD6       | P 219 80                  | CNT PRESS INSTRM      | EXEMPT        |
| PT 2081    | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153DD6       | P 185 70                  | CNT PRESS INSTRM      | EXEMPT        |
| PT 2082    | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153DD6       | P 185 70                  | CNT PRESS INSTRM      | EXEMPT        |
| PT 2083    | PRESSURE TRANSMITTER | ROSEMOUNT           | 1153DD6       | P 185 66                  | CNT PRESS INSTRM      | EXEMPT        |

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T A B L E 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT             | MANUFACTURER     | MODEL         | LOCATION<br>#BLDG./RH/ELV | SERVICE                       | EDS<br>NUMBER |
|------------|-----------------------|------------------|---------------|---------------------------|-------------------------------|---------------|
| PT 2087 A  | PRESSURE TRANSMITTER  | ROSEMOUNT        | 1153GAB       | P 185 63                  | CNT PRESS INSTRM              | 39.4.2        |
| PT 2087 B  | PRESSURE TRANSMITTER  | ROSEMOUNT        | 1153GAB       | P 219 67                  | CNT PRESS INSTRM              | 39.4.2        |
| PT 2210    | PRESSURE TRANSMITTER  | FISCHER & PORTER | 50EP1041BCSB  | T 103 66                  | MAIN STEAM LINE PRESSURE      | MILD          |
| PT 2230    | PRESSURE TRANSMITTER  | FISCHER & PORTER | 50EP1041BCSB  | T 103 66                  | MAIN CTEAM LINE PRESSURE      | MILD          |
| PT 2250    | PRESSURE TRANSMITTER  | FISCHER & PORTER | 50EP1041BCSB  | T 103 66                  | MAIN STEAM LINE PRESSURE      | MILD          |
| PT 2270    | PRESSURE TRANSMITTER  | FISCHER & PORTER | 50EP1041BCSB  | T 103 66                  | MAIN STEAM LINE PRESSURE      | MILD          |
| PT 3072 A  | PRESSURE TRANSMITTER  | FISCHER/PORTER   | 55PD1111A     | T 91 45                   | AUX FDM PHP A SUCT PRESS      | MILD          |
| PT 3072 B  | PRESSURE TRANSMITTER  | FISCHER/PORTER   | 55PD1111A4A   | T 90 45                   | AUX FDM PHP B SUCT PRESS      | MILD          |
| PT 3083 A  | PRESSURE TRANSMITTER  | BARTON           | 393           | T 91 45                   | AUX FDM PHP A DISCH           | MILD          |
| PT 3083 B  | PRESSURE TRANSMITTER  | BARTON           | 393           | T 91 45                   | AUX FDM PHP B DISCH           | MILD          |
| PV 3072 A  | CONVERTER             | FISHER/PORTER    | 50EK1000      | T 89 45                   | DSL AFM PHP A SUCT PRESS      | MILD          |
| PV 3072 B  | CONVERTER             | FISHER/PORTER    | 50EK1000      | T 90 45                   | DSL AFM PHP B SUCT PRESS      | MILD          |
| Q 71       | 24 VDC BATTERY & RACK | SAB-NIFE         | (30) H410-2   | T 90 45                   | AFM DSL BTRY                  | MILD          |
| Q 73       | CONTROL STATION       |                  |               | T 90 45                   | DSL HTR & LOPP CONTACTORS     | MILD          |
| Q 75       | TRANSIENT SHIELD      | TEC              | 160-2         | C 085A 129                | TRANSIENT SHIELD              | 26.4.3        |
| Q 80       | BATTERY CHARGER       | SAB-NIFE         | SCBF100-24-25 | T 90 45                   | AUX FDM DSL 24V BTRY CHARGER  | MILD          |
| Q 108 C    | TRANSFER SWITCH       |                  |               | I 394 23                  | DISC SW SRV MTR PHP P108C     | MILD          |
| Q 210 C    | TRANSFER SWITCH       | ITE              | LATER         | A 164 45                  | TRANS A/B SW COM CL MTR P210C | EXEMPT        |
| Q 318 A    | POWER PANEL           | WESTINGHOUSE     | N/A           | T 107 69                  | POST LOCA H2 RECOMBINER PHL   | MILD          |

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TABLE 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT           | MANUFACTURER | MODEL              | LOCATION<br>*BLDG./RM/ELV |     | SERVICE                           | EQS<br>NUMBER |
|------------|---------------------|--------------|--------------------|---------------------------|-----|-----------------------------------|---------------|
| Q 318 B    | POWER PANEL         | WESTINGHOUSE | N/A                | C 38                      | 61  | POST LOCA H2 RECOMBINER PNL       | MILD          |
| Q 3043 A   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 438                     | 59  | FT 3043A AFW HT TR                | EXEMPT        |
| Q 3043 B   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 441                     | 59  | FT 3043B AFW HT TR                | EXEMPT        |
| Q 3043 C   | HEAT TRACING TAPE   | CHEMELEX     | 5BTV-CR            | M 440                     | 59  | FT 3043C AFW HT TR                | EXEMPT        |
| Q 3043 D   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 439                     | 59  | FT 3043D AFW HT TR                | EXEMPT        |
| Q 3043 E   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 441                     | 59  | FT 3043E AFW HT TR                | EXEMPT        |
| Q 3043 F   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 441                     | 59  | FT 3043F AFW HT TR                | EXEMPT        |
| Q 3043 G   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 440                     | 59  | FT 3043G/PT 525 & 535 HT TR       | EXEMPT        |
| Q 3043 H   | HEAT TRACING TAPE   | CHEMELEX     | 4ATV1              | M 439                     | 59  | FT 3043H/PT 515 & 545 HT TR       | EXEMPT        |
| Q 7030 A   | HEAT TRACING TAPE   |              |                    | E 358                     | 77  | RVLS HT TR CHAN A                 | SEE E-2       |
| Q 7031 A   | HEAT TRACING TAPE   |              |                    | E 358                     | 77  | RVLS HT TR CHAN B                 | SEE E-2       |
| QK 107 B   | CONTROL PANEL       |              |                    | T C160                    | 45  | AUX FDM DSL STR CONT              | MILD          |
| QMP 168    | CONTROL PANEL       |              |                    | T 90                      | 45  | AUX FDM L O PMP CONT              | MILD          |
| RE 6115 A  | RADIATION DETECTOR  | VICTOREEN    | 877-1 (MODEL 875)  | C OBSA                    | 133 | CNT AREA MNG (ARM 15A)            | 28.4.2/28.4.4 |
| RE 6115 B  | RADIATION DETECTOR  | VICTOREEN    | 877-1 (MODEL 875)  | C OBSA                    | 106 | CNT AREA MNG (ARM 15B)            | 28.4.2/28.4.4 |
| RIS 6115 A | RADIATION RATEMETER | VICTOREEN    | 876A-1             | C 53                      | 97  | CONTAINMENT AREA MONITG (ARM 15A) | 28.4.2/28.4.4 |
| RIS 6115 B | RADIATION RATEMETER | VICTOREEN    | 876A-1             | C 53                      | 97  | CONTAINMENT AREA MNG (ARM 15B)    | 28.4.2/28.4.4 |
| RT 10400   | ROOM THERMOSTAT     | POWERS       | SERIES 90 MODEL 55 | T 86                      | 45  | DSL GEN EAST RM THERMO            | MILD          |
| RT 10401   | ROOM THERMOSTAT     | POWERS       | SERIES 90 MODEL 55 | T 85                      | 45  | DSL GEN WEST RM THERMO            | MILD          |

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TABLE 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT           | MANUFACTURER | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                       | EQS<br>NUMBER |
|------------|---------------------|--------------|-------------|---------------------------|-------------------------------|---------------|
| SE 1189 A  | FLOW MONITOR        | ENDEVCO/TEC  | 2273A       | C PRZR 120                | PRSRZ SAFE RLF VLV IND        | 26.4.3        |
| SE 1189 B  | FLOW MONITOR        | ENDEVCO/TEC  | 2273A       | C PRZR 120                | PRSRZ SAFE RLF VLV IND        | 26.4.3        |
| SE 1189 C  | FLOW MONITOR        | ENDEVCO/TEC  | 2273A       | C PRZR 120                | PRSRZ SAFE RLF VLV IND        | 26.4.3        |
| SS 6336    | SEISMIC OMNITRIGGER |              |             | O OUT 45                  | SEISMIC DET                   | MILD          |
| ST 6336 A  | SEISMIC MONITOR     | NO NAMEPLATE |             | C OBSF 45                 | SEISMIC ACCLRM                | EXEMPT        |
| ST 6336 B  | SEISMIC MONITOR     |              |             | C OBSA 201                | SEISMIC ACCLRM                | EXEMPT        |
| ST 6336 C  | SEISMIC MONITOR     | KINEMATICS   | 16314       | F 280 93                  | SEISMIC ACCLRM                | SEE E-2       |
| ST 6336 D  | SEISMIC MONITOR     | KINEMATICS   | 16314       | C 45 77                   | SEISMIC ACCLRM                | MILD          |
| ST 6336 E  | SEISMIC MONITOR     |              |             | O OUT 45                  | SEISMIC ACCLRM                | MILD          |
| SV 455 AA  | SOLENOID VALVE      | ASCO         | NP831654E   | C PRZR 128                | PORV-PRSRZ TO PRSRZ RELIEF TK | 19.4.4        |
| SV 455 AB  | SOLENOID VALVE      | ASCO         | NP831654E   | C PRZR 128                | PORV-PRSRZ TO PRSRZ RELIEF TK | 19.4.4        |
| SV 456 A   | SOLENOID VALVE      | ASCO         | NP831654E   | C PRZR 128                | PORV-PRSRZ TO PRSRZ RELIEF TK | 19.4.4        |
| SV 456 B   | SOLENOID VALVE      | ASCO         | NP 1654E    | C PRZR 128                | PORV-PRSRZ TO PRSRZ RELIEF TK | 19.4.4        |
| SV 510 A   | SOLENOID VALVE      | ASCO         | LB8300C58RU | T 113 107                 | STM GEN LP1 FDM CONT VLV TRIP | MILD          |
| SV 510 B   | SOLENOID VALVE      | ASCO         | LB8300C58RU | T 113 107                 | STM GEN LP1 FDM CONT VLV TRIP | MILD          |
| SV 520 A   | SOLENOID VALVE      | ASCO         | LB8300C58   | T 113 107                 | STM GEN LP2 FDM CONT VLV TRIP | MILD          |
| SV 520 B   | SOLENOID VALVE      | ASCO         | LF8300C58RU | T 113 107                 | STM GEN LP2 FDM CONT VLV TRIP | MILD          |
| SV 530 A   | SOLENOID VALVE      | ASCO         | LB8300C58RU | T 113 107                 | STM GEN LP3 FDM CONT VLV TRIP | MILD          |
| SV 530 B   | SOLENOID VALVE      | ASCO         | LB8300C58RU | T 113 107                 | STM GEN LP3 FDM CONT VLV TRIP | MILD          |

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Amendment 5  
(August 1988)

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL       | LOCATION<br>#BLDG./RM/ELV | SERVICE                       | EQS<br>NUMBER |
|------------|----------------|--------------|-------------|---------------------------|-------------------------------|---------------|
| SV 540 A   | SOLENOID VALVE | ASCO         | 1B8300C58RU | T 113 107                 | STM GEN LP4 FDM CONT VLV TRIP | MILD          |
| SV 540 B   | SOLENOID VALVE | ASCO         | 1B8300C58RU | T 113 107                 | STM GEN LP4 FDM CONT VLV TRIP | MILD          |
| SV 1015 A  | SOLENOID VALVE | TARGET ROCK  | 79AB-008    | C 08SA 93                 | REAC VESSEL VENT VLV          | 44.4.2/59.4.2 |
| SV 1015 B  | SOLENOID VALVE | TARGET ROCK  | 79AB-008    | C 08SA 93                 | REAC VESSEL VENT VLV          | 44.4.2/59.4.2 |
| SV 1016 A  | SOLENOID VALVE | TARGET ROCK  | 79AB-008    | C 08SA 93                 | REAC VESSEL VENT VLV          | 44.4.2/59.4.2 |
| SV 1016 B  | SOLENOID VALVE | TARGET ROCK  | 79AB-008    | C 08SA 93                 | REAC VESSEL VENT VLV          | 44.4.2/59.4.2 |
| SV 1451    | SOLENOID VALVE | ASCO         | NP18344A70E | M 442 69                  | AFM PHP STM TURB INL          | 19.4.4        |
| SV 1452    | SOLENOID VALVE | ASCO         | NP8744A70E  | M 445 69                  | AFM PHP STM TURB INL          | 19.4.4        |
| SV 1453    | SOLENOID VALVE | ASCO         | NP8344A70E  | M 445 69                  | AFM PHP STM TURB INL          | 19.4.4        |
| SV 1454    | SOLENOID VALVE | ASCO         | NP8344A70E  | M 445 69                  | AFM PHP STM TURB INL          | 19.4.4        |
| SV 1787    | SOLENOID VALVE | ASCO         | NP8320A185E | A 127 5                   | RHR TRAIN A SHPL              | 19.4.4        |
| SV 1783    | SOLENOID VALVE | ASCO         | NP8320A185E | A 127 5                   | RHR TRAIN B SHPL              | 19.4.4        |
| SV 2216 A  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 438 59                  | STM LN A ISLN VALVE           | 19.4.2/19.4.4 |
| SV 2216 B  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 438 59                  | STM LN A ISLN VALVE           | 19.4.2/19.4.4 |
| SV 2236 A  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 441 59                  | STM LN B ISLN VALVE           | 19.4.2/19.4.4 |
| SV 2236 B  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 441 59                  | STM LN B ISLN VALVE           | 19.4.2/19.4.4 |
| SV 2256 A  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 440 59                  | STM LN C ISLN VALVE           | 19.4.2/19.4.4 |
| SV 2256 B  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 440 59                  | STM LN C ISLN VALVE           | 19.4.2/19.4.4 |
| SV 2276 A  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 439 59                  | STM LN D ISLN VALVE           | 19.4.2/19.4.4 |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL       | LOCATION<br>#BLDG./RM/ELV | SERVICE                 | EQS<br>NUMBER |
|------------|----------------|--------------|-------------|---------------------------|-------------------------|---------------|
| SV 2276 B  | SOLENOID VALVE | ASCO         | NP8316E36E  | M 439 59                  | STM LN D ISLN VALVE     | 19.4.2/19.4.4 |
| SV 2277 A  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 447 104                 | STM LN A ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2277 B  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 446 104                 | STM LN A ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2278 A  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 448 104                 | STM LN B ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2278 B  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 449 104                 | STM LN B ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2279 A  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 447 104                 | STM LN C ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2279 B  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 448 104                 | STM LN C ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2280 A  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 448 104                 | STM LN D ISLN VALVE BVP | 19.4.2/19.4.4 |
| SV 2280 B  | SOLENOID VALVE | ASCO         | NP8316E6E   | M 447 104                 | STM LN D ISL VLV BVP    | 19.4.2/19.4.4 |
| SV 2294 A  | SOLENOID VALVE | ASCO         | NP8320A195E | M 445 77                  | STM LN B DR             | 19.4.2        |
| SV 2294 B  | SOLENOID VALVE | ASCO         | NP8320A195E | M 445 77                  | STM LN B DR             | 19.4.2        |
| SV 2295 A  | SOLENOID VALVE | ASCO         | NP8320A195E | M 444 77                  | STM LN C DR             | 19.4.2        |
| SV 2295 B  | SOLENOID VALVE | ASCO         | NP8320A195E | M 444 77                  | STM LN C DR             | 19.4.2        |
| SV 2296 A  | SOLENOID VALVE | ASCO         | NP8320A195E | M 443 77                  | STM LN D DR             | 19.4.2        |
| SV 2296 B  | SOLENOID VALVE | ASCO         | NP8320A195E | M 443 77                  | STM LN D DR             | 19.4.2        |
| SV 2297 A  | SOLENOID VALVE | ASCO         | NP8320A195E | M 442 77                  | STM LN A DC             | 19.4.2        |
| SV 2297 B  | SOLENOID VALVE | ASCO         | NP8320A195E | M 442 77                  | STM LN A DR             | 19.4.2        |
| SV 2809 A  | SOLENOID VALVE | ASCO         | NP8320A185E | M 439 61                  | STM GEN D BLDG SHPL     | 19.4.2        |
| SV 2809 B  | SOLENOID VALVE | ASCO         | NP8320A185E | M 439 61                  | STM GEN D BLDG SHPL     | 19.4.2        |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT E-ELECTRICAL PENETRATION F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS



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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER         | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                    | EQS<br>NUMBER |
|------------|----------------|----------------------|-------------|---------------------------|----------------------------|---------------|
| SV 2811 A  | SOLENOID VALVE | ASCO                 | NP8320A185E | M 438 62                  | STM GEN A BLDN SMPL        | 19.4.2        |
| SV 2811 B  | SOLENOID VALVE | ASCO                 | NP8320A185E | M 438 62                  | STM GEN A BLDN SMPL        | 19.4.2        |
| SV 2814 A  | SOLENOID VALVE | ASCO                 | NP8320A185E | M 440 64                  | STM GEN C BLDN SMPL        | 19.4.2        |
| SV 2814 B  | SOLENOID VALVE | ASCO                 | NP8320A185E | M 440 64                  | STM GEN C BLDN SMPL        | 19.4.2        |
| SV 2880 A  | SOLENOID VALVE | ASCO                 | NP8320A185E | M 441 61                  | STM GEN B BLDN SMPL        | 19.4.2        |
| SV 2880 B  | SOLENOID VALVE | ASCO                 | NP8320A185E | M 441 61                  | STM GEN B BLDN SMPL        | 19.4.2        |
| SV 2993 A1 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 1 BYP CNTRL VLV     | MILD          |
| SV 2993 A2 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 1 BYP CNTRL VLV     | MILD          |
| SV 2993 B1 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 2 BYP CONT VLV      | MILD          |
| SV 2993 B2 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 2 BYP CONT VLV      | MILD          |
| SV 2993 C1 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 3 BYP CONT VLV      | MILD          |
| SV 2993 C2 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 3 BYP CONT VLV      | MILD          |
| SV 2993 D1 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 4 BYP CONT VLV      | MILD          |
| SV 2993 D2 | SOLENOID VALVE | ASCO                 | WP8300C61RU | T 113 103                 | FDW LP 4 BYP CONT VLV      | MILD          |
| SV 3237    | SOLENOID VALVE | CIRCLE SEAL CONTROLS | P113326A    | A 216 77                  | CCW SURGETK T204A N2 BLKT  |               |
| SV 3238    | SOLENOID VALVE | CIRCLE SEAL CONTROLS | P113326A    | A 216 77                  | CCW SURGE TK T204A N2 RLF  |               |
| SV 3239    | SOLENOID VALVE | CIRCLE SEAL CONTROLS | P113326A    | A 216 77                  | CCW SURGE TK T204B N2 BLKT |               |
| SV 3240    | SOLENOID VALVE | CIRCLE SEAL CONTROLS | P113326A    | A 216 77                  | CCW SRG TK T204B N2 RLF    |               |
| SV 3287    | SOLENOID VALVE | ASCO                 | NP8321A6E   | F 234 45                  | CCW TO CATII HX            | EXEMPT        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL       | LOCATION<br>#BLDG./RM/ELV | SERVICE                   | EQS<br>NUMBER |
|------------|----------------|--------------|-------------|---------------------------|---------------------------|---------------|
| SV 3288    | SOLENOID VALVE | ASCO         | NP8321A6E   | F 234                     | CCM TO CATII HX           | EXEMPT        |
| SV 3303    | SOLENOID VALVE | ASCO         | NP8321A6E   | A 164                     | CCM CLASS II EQUIP RET 1  | EXEMPT        |
| SV 3304    | SOLENOID VALVE | ASCO         | NP8321A6E   | A 164                     | CCM CLASS II EQUIP RET 1  | EXEMPT        |
| SV 3712 A  | SOLENOID VALVE | ASCO         | NP8321A5E   | T 85                      | SM TO DSL GEN AIR CLR     | MILD          |
| SV 3712 B  | SOLENOID VALVE | ASCO         | NP8321A5E   | T 86                      | SM TO DSL GEN AIR CLR     | MILD          |
| SV 3714    | SOLENOID VALVE | ASCO         | NP8321A5E   | T 86                      | SM BSTRY NON-CRITICAL ISL | MILD          |
| SV 3720 A  | SOLENOID VALVE | ASCO         | NP8321A5E   | A 164                     | SM TO HVAC RM CLR         | EXEMPT        |
| SV 3720 B  | SOLENOID VALVE | ASCO         | NP8321A5E   | A 164                     | SM TO HVAC RM CLR         | EXEMPT        |
| SV 3722 A  | SOLENOID VALVE |              |             | O OUT                     | SM TO STR A BACKWASH      | MILD          |
| SV 3722 B  | SOLENOID VALVE |              |             | O OUT                     | SM TO STR B BACKWASH      | MILD          |
| SV 3725    | SOLENOID VALVE | ASCO         | NP8321A5E   | T 85                      | SM NON-CRITICAL ISL       | MILD          |
| SV 3803    | SOLENOID VALVE | ASCO         | NP8321A5E   | I 394                     | SM DOMESTIC MTR SPLY      | MILD          |
| SV 3804    | SOLENOID VALVE | ASCO         | NP8321A5E   | I 394                     | SM DOMESTIC MTR SPLY      | MILD          |
| SV 4000    | SOLENOID VALVE | ASCO         | NP8321A5E   | P 170                     | REAC COOL DR TK N2 SPLY   | 19.4.2        |
| SV 4006    | SOLENOID VALVE | ASCO         | NP8321A5E   | P 169                     | REAC COOL DR TK OUT       | 19.4.2        |
| SV 4181    | SOLENOID VALVE | ASCO         | 206-8323HF  | P 170                     | CNT SUMP PMP DISCH        | 19.4.2        |
| SV 4301    | SOLENOID VALVE | ASCO         | NP8321A5E   | P 185                     | GAS RAD M LN              | 19.4.2        |
| SV 4470    | SOLENOID VALVE | ASCO         | NP8320A185E | M 440                     | SVCE AIR SPLY TO CNT      | 19.4.2        |
| SV 4471    | SOLENOID VALVE | ASCO         | NP8320A185E | M 440                     | INST AIR SPLY TO CNT      | 19.4.2        |

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(August 1988)

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL       | LOCATION<br>#BLDG./RM/VOLV | SERVICE                       | EQS<br>NUMBER |
|------------|----------------|--------------|-------------|----------------------------|-------------------------------|---------------|
| SV 5075    | SOLENOID VALVE | ASCO         | HV2025012F  | A 178 45                   | REFUEL MTR TO P208 SUCT CHAN1 | EXEMPT        |
| SV 5076    | SOLENOID VALVE | ASCO         | HV2025012F  | A 178 45                   | REFUEL MTR TO P208 SUCT CHAN2 | EXEMPT        |
| SV 5642    | SOLENOID VALVE | TARGET ROCK  | 80N-001     | C 085B 70                  | N2 SHPL LN CR                 | 34.4.2/59.4.2 |
| SV 5643    | SOLENOID VALVE | TARGET ROCK  | 80N-001     | C 085A 93                  | N2 SHPL LN DR                 | 34.4.2/59.4.2 |
| SV 5652    | SOLENOID VALVE | ASCO         | 206-381-3RF | E 358 51                   | ACCUM COM SHPL ISL VALVE      | EXEMPT        |
| SV 5655    | SOLENOID VALVE | ASCO         | 206-381-3RF | E 358 51                   | RCS HOT LEG SAMPLE VALVE/PASS | 19.4.2        |
| SV 5657    | SOLENOID VALVE | ASCO         | 206-381-3RF | E 358 51                   | FROM PRSRZ TO SHPLG SYS       | EXEMPT        |
| SV 5659    | SOLENOID VALVE | ASCO         | 206-381-3RF | E 358 51                   | FROM PRSRZ TO SHPLG SYS       | EXEMPT        |
| SV 5661    | SOLENOID VALVE | ASCO         | 206-381-3RF | E 358 51                   | RCDT SHPL TO AUTO GAS ANAL    | EXEMPT        |
| SV 5679    | SOLENOID VALVE | TARGET ROCK  | 80N-001     | C 085A 93                  | N2 SHPL LN DR                 | 34.4.2/59.4.2 |
| SV 6991    | SOLENOID VALVE | VALCOR       | V256-5294-3 | A 225 93                   | CNT PERSONNEL AIR LOCK VLV    | EXEMPT        |
| SV 6992    | SOLENOID VALVE | VALCOR       | V256-5294-3 | A 225 93                   | CNT PERSONNEL AIR LOCK VLV    | EXEMPT        |
| SV 8025    | SOLENOID VALVE | ASCO         | NP8321A5E   | E 358 51                   | PRSRZ RLF TK TO AUTO GAS ANAL | SEE E-2       |
| SV 8026    | SOLENOID VALVE | ASCO         | NP8320A162E | C 085B 54                  | PRSRZ RLF TK TO AUTO GAS ANAL | 19.4.2        |
| SV 8028    | SOLENOID VALVE | ASCO         | NP831654E   | P 168 45                   | PRI MTR TO PRT                | EXEMPT        |
| SV 8033    | SOLENOID VALVE | ASCO         | NP831654E   | P 168 45                   | N2 TO PSZR RLF TK             | EXEMPT        |
| SV 8149 A1 | SOLENOID VALVE | ASCO         | NP831654E   | C 085B 66                  | RCS LTDWN LN                  | 19.4.4        |
| SV 8149 B1 | SOLENOID VALVE | ASCO         | NP831654E   | C 085B 66                  | RCS LTDWN LN                  | 19.4.4        |
| SV 8149 C1 | SOLENOID VALVE | ASCO         | NP831654E   | C 085B 66                  | RCS LTDWN LN                  | 19.4.4        |

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT      | MANUFACTURER | MODEL       | LOCATION<br>*BLOG./RM/ELV | SERVICE                      | EQS<br>NUMBER |
|-------------|----------------|--------------|-------------|---------------------------|------------------------------|---------------|
| SV 8152     | SOLENOID VALVE | ASCO         | NP831654E   | P 185 63                  | RCS LTDW4 LN                 | EXEMPT        |
| SV 8823     | SOLENOID VALVE | ASCO         | 206-381-6RF | C OBSB 59                 | SI TEST LN                   | 19.4.2        |
| SV 8824     | SOLENOID VALVE | ASCO         | 206-381-6RF | C OBSB 56                 | SI TEST LN                   | 19.4.2        |
| SV 8843     | SOLENOID VALVE | ASCO         | 206-381-6RF | C OBSB 58                 | SI TEST LN                   | 19.4.2        |
| SV 8870 A   | SOLENOID VALVE | ASCO         | 2063816RF   | A 141 25                  | BIT TO BIST/RECIRC           | 19.4.2        |
| SV 8870 B   | SOLENOID VALVE | ASCO         | 2063816RF   | A 141 25                  | BIT TO BIST/RECIRC           | 19.4.2        |
| SV 8871     | SOLENOID VALVE | ASCO         | 2063816RF   | C OBSB 58                 | ACCUM-CVCS HT ISL            | 19.4.2        |
| SV 8880     | SOLENOID VALVE | ASCO         | NP831654E   | P 185 45                  | N2 LN TO ACCUM TKS ISL VLV   | EXEMPT        |
| SV 8881     | SOLENOID VALVE | ASCO         | 2063816RF   | C OBSB 63                 | HOT LEG/SI FILL LN           | 19.4.2        |
| SV 8883     | SOLENOID VALVE | ASCO         | 2063816RF   | A 141 25                  | ACID XFR PMP DISCH           | 19.4.2        |
| SV 8888     | SOLENOID VALVE | ASCO         | NP831654E   | P 185 63                  | SI PMP ACCUM TEST LN ISL     | EXEMPT        |
| SV 8964     | SOLENOID VALVE | ASCO         | 2063816RF   | P 168 45                  | ACCUM TO HOLD-UP TK ISL VLV  | 19.4.2        |
| SV 10014    | SOLENOID VALVE | ASCO         | 2068323RF   | P 219 77                  | CHLD MTR RTN                 | EXEMPT        |
| SV 10015    | SOLENOID VALVE | ASCO         | 2068323RF   | P 219 77                  | CHLD MTR SPLY                | EXEMPT        |
| SV 10250CB2 | SOLENOID VALVE |              |             | C 53 93                   | OUTSIDE AIR DMPR CONT CB-2   | MILD          |
| SV 10250CB3 | SOLENOID VALVE |              |             | C 53 93                   | FUME HOOD EXST DMPR CONT CB3 | MILD          |
| SV 10250CB4 | SOLENOID VALVE |              |             | C 53 93                   | TOILET EXST DAMPER CONT CB4  | MILD          |
| SV 10251 A  | SOLENOID VALVE |              |             | C 53 93                   | OUTSIDE AIR DMPR CONT CB-1   | MILD          |
| SV 10251 B  | SOLENOID VALVE |              |             | C 53 93                   | OUTSIDE AIR DMPR CONT CB-1   | MILD          |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT        | MANUFACTURER | MODEL | LOCATION<br>#BLDG./RM/ELV | SERVICE                   | EQS<br>NUMBER |
|------------|------------------|--------------|-------|---------------------------|---------------------------|---------------|
| SV 10501   | SOLENOID VALVE   |              |       | C 53 93                   | RECIRC AIR DMPR CONT CB-2 | MILD          |
| SV 10502   | SOLENOID VALVE   |              |       | C 53 93                   | RECIRC AIR DMPR CONT CB-2 | MILD          |
| SV 10503   | SOLENOID VALVE   |              |       | C 53 93                   | EXH AIR DMPR CONT CB-12   | MILD          |
| SV 10504   | SOLENOID VALVE   |              |       | C 53 93                   | SPLY AIR DMPR CONT CB-2   | MILD          |
| CY 1189 A  | CHARGE CONVERTER | TEC          | 504A  | C OBSA 129                | SE1189A CHARGE CONVERTER  | 26.4.3        |
| SV 1189 B  | CHARGE CONVERTER | TEC          | 504A  | C OBSA 129                | SE1189B CHARGE CONVERTER  | 26.4.3        |
| SV 1189 C  | CHARGE CONVERTER | TEC          | 504A  | C OBSA 129                | SE1189C CHARGE CONVERTER  | 26.4.3        |
| TE 410 A   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 1 HOT LEG AT/TAVG  | 15.4.2        |
| TE 410 B   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 1 COLD LEG AT/TAVG | 15.4.2        |
| TE 411 A   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 1 HOT LEG AT/TAVG  | 15.4.2        |
| TE 411 B   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 1 COLD LEG AT/TAVG | 15.4.2        |
| TE 413 A   | RTD              | ROSEMOUNT    | 176KS | C IBSA 62                 | RCS LP 1 HOT LEG          | 15.4.2        |
| TE 413 B   | RTD              | ROSEMOUNT    | 176KS | C IBSA 62                 | RCS LP 1 COLD LEG         | 15.4.2        |
| TE 420 A   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 2 HOT LEG AT/TAVG  | 15.4.2        |
| TE 420 B   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 2 COLD LEG AT/TAVG | 15.4.2        |
| TE 421 A   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 2 HOT LEG AT/TAVG  | 15.4.2        |
| TE 421 B   | RTD              | ROSEMOUNT    | 176KF | C IBSA 62                 | RCS LP 2 COLD LEG AT/TAVG | 15.4.2        |
| TE 423 A   | RTD              | ROSEMOUNT    | 176KS | C IBSA 62                 | RCS LP 2 HOT LEG          | 15.4.2        |
| TE 423 B   | RTD              | ROSEMOUNT    | 176KS | C IBSA 62                 | RCS LP 2 COLD LEG         | 15.4.2        |

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Amendment 5  
(August 1988)

ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT | MANUFACTURER | MODEL            | LOCATION<br>*BLDG./RM/ELV | SERVICE                   | EQS<br>NUMBER |
|------------|-----------|--------------|------------------|---------------------------|---------------------------|---------------|
| TE 430 A   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 3 HOT LEG AT/TAVG  | 15.4.2        |
| TE 430 B   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 3 COLD LEG AT/TAVG | 15.4.2        |
| TE 431 A   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 3 HOT LEG AT/TAVG  | 15.4.2        |
| TE 431 B   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 3 COLD LEG AT/TAVG | 15.4.2        |
| TE 433 A   | RTD       | ROSEMOUNT    | 176KS            | C IBSA 62                 | RCS LP 3 HOT LEG          | 15.4.2        |
| TE 433 B   | RTD       | ROSEMOUNT    | 176KS            | C IBSA 62                 | RCS LP 3 COLD LEG         | 15.4.2        |
| TE 440 A   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 4 HOT LEG AT/TAVG  | 15.4.2        |
| TE 440 B   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 4 COLD LEG AT/TAVG | 15.4.2        |
| TE 441 A   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 4 HOT LEG AT/TAVG  | 15.4.2        |
| TE 441 B   | RTD       | ROSEMOUNT    | 176KF            | C IBSA 62                 | RCS LP 4 COLD LEG AT/TAVG | 15.4.2        |
| TE 443 A   | RTD       | ROSEMOUNT    | 176KS            | C IBSA 62                 | RCS LP 4 HOT LEG          | 15.4.2        |
| TE 443 B   | RTD       | ROSEMOUNT    | 176KS            | C IBSA 62                 | RCS LP 4 COLD LEG         | 15.4.2        |
| TE 604     | RTD       | PYCO         | 122-6012-06-17.8 | A 127 5                   | RHR HT EXCHR A OUT        | 48.4.2        |
| TE 605     | RTD       | PYCO         | 122-6012-06-17.8 | A 122 5                   | RHR HT EXCHR B OUT        | 48.4.2        |
| TE 899     | RTD       | MINCO        | 58809            | C OBSB 92                 | RVLIS DENSITY CPRSR       | 54.4.2        |
| TE 900     | RTD       | MINCO        | 58809            | C OBSA 96                 | RVLIS DENSITY CPRSR       | 54.4.2        |
| TE 901     | RTD       | MINCO        | 58809            | C OBSA 94                 | RVLIS DENSITY CPRSR       | 54.4.2        |
| TE 902     | RTD       | MINCO        | 58809            | C IBSA 62                 | RVLIS DENSITY CPRSR       | 54.4.2        |
| TE 903     | RTD       | MINCO        | 58809            | C IBSA 66                 | RVLIS DENSITY CPRSR       | 54.4.2        |

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07/26/88

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ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT           | MANUFACTURER          | MODEL                 | LOCATION<br>*BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER |
|------------|---------------------|-----------------------|-----------------------|---------------------------|-----------------------------|---------------|
| TE 904     | RTD                 | MINCO                 | S8809                 | C IBSF 41                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 905     | RTD                 | MINCO                 | S8809                 | C IBSF 24                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 906     | RTD                 | MINCO                 | S8809                 | C IBSA 92                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 907     | RTD                 | MINCO                 | S8809                 | C OBSA 96                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 908     | RTD                 | MINCO                 | S8809                 | C IBSA 84                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 909     | RTD                 | MINCO                 | S8809                 | C IBSA 61                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 910     | RTD                 | MINCO                 | S8809                 | C IBSA 65                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 911     | RTD                 | MINCO                 | S8809                 | C IBSF 43                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 912     | RTD                 | MINCO                 | S8809                 | C IBSF 26                 | RVLIS DENSITY CPRSR         | 54.4.2        |
| TE 3273 A2 | TEMPERATURE ELEMENT | CAMCO                 | 1/2F 304              | F 234 45                  | EXIT TEMP FROM CCM HX-204B  | EXEMPT        |
| TE 3283 A2 | TEMPERATURE ELEMENT | CAMCO                 | 1/2F 304              | F 234 45                  | EXIT TEMP FROM CCM HX-204A  | EXEMPT        |
| TE 10134   | RTD                 | WEED                  | N9017D-1A             | C OBSB 65                 | CNT ATM TEMP                | 76.4.2        |
| UCDA 1     | SMOKE DETECTOR      | PYROTRONICS           | N/A                   | T 86 45                   | DSL GEN RM SMOKE DET        | MILD          |
| UVW 187    | HEATER              | CHROMALOX             | LUH1036AR0L0-00-3B-08 | C 39 65                   | BTRY RM HTR                 | MILD          |
| UVW 188    | HEATER              | CHROMALOX             | LUH1036AR0L0-00-3B-08 | C 40 65                   | BTRY RM HTR                 | MILD          |
| UX 318 A   | RECOMBINER          | WESTINGHOUSE          | N/A                   | C OBSA 93                 | H2 RECOMBINER A             | 7.4.2         |
| UX 318 B   | RECOMBINER          | WESTINGHOUSE          | N/A                   | C OBSA 93                 | H2 RECOMBINER B             | 7.4.2         |
| VE 159 A   | DUCT HEATER         | WIEGAND DV OF EMERSON | DHI18H024L-022KH460V3 | C 77 105                  | CNTL RM EMER UNIT REHT COIL | MILD          |
| VE 159 B   | DUCT HEATER         | WIEGAND DV OF EMERSON | DHI18H024L-022KH460V3 | C 77 105                  | CNTL RM EMER UNIT REHT COIL | MILD          |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

1<sup>st</sup> CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT              | MANUFACTURER          | MODEL                 | LOCATION<br>*BLDG./RM/ELV |     | SERVICE                       | EQS<br>NUMBER |
|------------|------------------------|-----------------------|-----------------------|---------------------------|-----|-------------------------------|---------------|
| VE 161 A   | DUCT HEATER            | WIEGAND DV OF EMERSON | DHF12H024L-010KW460V3 | C 77                      | 105 | CNTL RM EMER UNIT REHT COIL   | MILD          |
| VE 161 B   | DUCT HEATER            | WIEGAND DV OF EMERSON | DHF12H024L-010KW460V3 | C 77                      | 105 | CNTL RM EMER UNIT REHT COIL   | MILD          |
| NR 424     | THREE PHASE RECEPTACLE | CROUSE-HINDS          | AR342-M72             | A 164                     | 45  | PHR RCPT FOR MV 256C          | MILD          |
| NR 425     | THREE PHASE RECEPTACLE | CROUSE-HINDS          | AR342-M72             | A 164                     | 45  | PHR RCPT FOR MV-256C          | MILD          |
| X 11       | TRANSFORMER            |                       |                       | T 107                     | 69  | 750 KVA LC XFMR # 1           | MILD          |
| X 12       | TRANSFORMER            | ITE                   |                       | C 38                      | 65  | 750 KVA LC XFMR # 2           | MILD          |
| X 13       | TRANSFORMER            |                       |                       | T 107                     | 69  | 750 KVA LC XFMR # 3           | MILD          |
| X 14       | TRANSFORMER            | ITE                   |                       | C 38                      | 65  | 750 KVA LC XFMR # 4           | MILD          |
| X 40       | TRANSFORMER            | HEVI-DUTY             | HS1F7.5A (1 PHASE)    | T 107                     | 69  | 7.5KVA,480/240 TO 240/120 VAC | 47.4.2        |
| X 41       | TRANSFORMER            | HEVI-DUTY             | HS1F7.5A (1 PHASE)    | C 41                      | 65  | 7.5KVA,480/240 TO 240/120 VAC | 47.4.2        |
| X 61       | TRANSFORMER            | HEVI-DUTY ELECTRIC CO | HS1F7.5A              | A 226                     | 93  | CHAS (A-TRAIN) PHR            | 47.4.1        |
| X 62       | TRANSFORMER            | HEVI-DUTY ELECTRIC CO | HS1F7.5A              | A 216                     | 77  | CHAS (B-TRAIN) PHR            | 47.4.1        |
| Y 11       | INSTRUMENT BUS         | WESTINGHOUSE          |                       | C 38                      | 65  | 120 VAC PFD INSTR BUS CHAN A  | MILD          |
| Y 13       | INSTRUMENT BUS         | WESTINGHOUSE          |                       | C 38                      | 65  | 120 VAC PFD INSTR BUS CHAN C  | MILD          |
| Y 15       | INVERTER               | ELGAR CORP.           | 752-1-107             | C 38                      | 65  | 120 V SPLY TO BUS Y11         | MILD          |
| Y 17       | INVERTER               | ELGAR CORP.           | 752-1-107             | C 38                      | 65  | 120 V SPLY TO BUS Y13         | MILD          |
| Y 22       | INSTRUMENT BUS         | WESTINGHOUSE          |                       | C 38                      | 65  | 120 VAC PFD INSTR BUS CHAN B  | MILD          |
| Y 24       | INSTRUMENT BUS         | WESTINGHOUSE          |                       | C 38                      | 65  | 120 VAC PFD INSTR BUS CHAN D  | MILD          |
| Y 26       | INVERTER               | WESTINGHOUSE          |                       | C 38                      | 65  | 120 V SPLY TO BUS Y22         | MILD          |

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T A B L E 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT    | MANUFACTURER | MODEL    | LOCATION<br>#BLDG./RM/ELV | SERVICE               | EQS<br>NUMBER |
|------------|--------------|--------------|----------|---------------------------|-----------------------|---------------|
| Y 28       | INVERTER     | WESTINGHOUSE |          | C 38                      | 120 V SPLY TO BUS Y24 | MILD          |
| Z5 455 A   | LIMIT SWITCH | NAMCO        | EA180    | C PRZR 130                | PORV                  | 42.4.2        |
| Z5 456     | LIMIT SWITCH | NAMCO        | EA180    | C PRZR 130                | PORV                  | 42.4.2        |
| Z5 510     | LIMIT SWITCH | NAMCO        | D2400XR2 | T 113 107                 | STM GEN LP 1 FDM FL   | MILD          |
| Z5 520     | LIMIT SWITCH | NAMCO        | D2400XR2 | T 113 107                 | STM GEN LP 2 FDM FL   | MILD          |
| Z5 530     | LIMIT SWITCH | NAMCO        | D2400XR2 | T 113 107                 | STM GEN LP 3 FDM FL   | MILD          |
| Z5 540     | LIMIT SWITCH | NAMCO        | D2400X   | T 113 107                 | STM GEN LP 4 FDM FL   | MILD          |
| Z5 1451 A  | LIMIT SWITCH | NAMCO        | EA180    | M 442 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1451 B  | LIMIT SWITCH | NAMCO        | EA180    | M 442 69                  | AFM PHP TURB STM INL  | 42.4.2/59.4.2 |
| Z5 1452 A  | LIMIT SWITCH | NAMCO        | EA180    | M 445 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1452 B  | LIMIT SWITCH | NAMCO        | EA180    | M 445 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1453 A  | LIMIT SWITCH | NAMCO        | EA180    | M 444 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1453 B  | LIMIT SWITCH | NAMCO        | EA180    | M 444 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1454 A  | LIMIT SWITCH | NAMCO        | EA180    | M 443 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1454 B  | LIMIT SWITCH | NAMCO        | EA180    | M 443 69                  | AFM PHP STM TURB INL  | 42.4.2/59.4.2 |
| Z5 1782    | LIMIT SWITCH | NAMCO        | EA180    | A 127 5                   | RHR TRAIN A SHPL      | 42.4.2        |
| Z5 1783    | LIMIT SWITCH | NAMCO        | EA180    | A 122 5                   | RHR TRAIN B SHPL      | 42.4.2        |
| Z5 2216    | LIMIT SWITCH | NAMCO        | EA740    | M 442 80                  | STM LN A ISLN VALVE   | 49.4.2        |
| Z5 2216 A  | LIMIT SWITCH | NAMCO        | EA180    | M 442 85                  | STM LN A ISLN VALVE   | 65.4.2        |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT E-ELECTRICAL PENETRATION F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS



T A B L E 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.54 MASTER LIST

| PLANT ID # | COMPONENT    | MANUFACTURER | MODEL       | LOCATION<br>*BLDG./RM/ELV | SERVICE                  | EQS<br>NUMBER |
|------------|--------------|--------------|-------------|---------------------------|--------------------------|---------------|
| Z5 2236    | LIMIT SWITCH | NAMCO        | EA740       | M 445 80                  | STM LN B ISLN VALVE      | 49.4.2        |
| Z5 2236 A  | LIMIT SWITCH | NAMCO        | EA180       | M 445 85                  | STM LN B ISLN VALVE      | 65.4.2        |
| Z5 2256    | LIMIT SWITCH | NAMCO        | EA740       | M 444 77                  | STM LN C ISLN VALVE      | 49.4.2        |
| Z5 2256 A  | LIMIT SWITCH | NAMCO        | EA180       | M 444 85                  | STM LN C ISLN VALVE      | 65.4.2        |
| Z5 2276    | LIMIT SWITCH | NAMCO        | EA740       | M 443 82                  | STM LN D ISLN VALVE      | 49.4.2        |
| Z5 2276 A  | LIMIT SWITCH | NAMCO        | EA180       | M 443 85                  | STM LN D ISLN VALVE      | 65.4.2        |
| Z5 2277    | LIMIT SWITCH | NAMCO        | SAI-33      | M 446 104                 | STM LN A ISLN VALVE BYP  | SEE E-2       |
| Z5 2278    | LIMIT SWITCH | NAMCO        | SAI-33/-153 | M 449 104                 | STM LN B ISLN VALVE BYP  | SEE E-2       |
| Z5 2279    | LIMIT SWITCH | NAMCO        | SAI-33      | M 448 104                 | STM LN C ISLN VALVE BYP  | SEE E-2       |
| Z5 2280    | LIMIT SWITCH | NAMCO        | SAI-33      | M 447 104                 | STM LN D ISLN VALVE BYP  | SEE E-2       |
| Z5 2294    | LIMIT SWITCH | NAMCO        | EA180       | M 445 76                  | ST LN B DR               | 42.4.2        |
| Z5 2295    | LIMIT SWITCH | NAMCO        | EA180       | M 444 77                  | STM LN C DR              | 42.4.2        |
| Z5 2296    | LIMIT SWITCH | NAMCO        | EA180       | M 443 77                  | STM LN D DR              | 42.4.2        |
| Z5 2297    | LIMIT SWITCH | NAMCO        | EA180       | M 442 77                  | STM LN A DR              | 42.4.2        |
| Z5 2809    | LIMIT SWITCH | NAMCO        | EA17032100  | M 436 61                  | STM GEN D BLDWN SMPL     | N/A           |
| Z5 2811    | LIMIT SWITCH | NAMCO        | EA170       | M 438 62                  | STM GEN A BLDWN SMPL     | N/A           |
| Z5 2814    | LIMIT SWITCH | NAMCO        | EA17032100  | M 440 64                  | STM GEN C BLDWN SMPL     | N/A           |
| Z5 2860    | LIMIT SWITCH | NAMCO        | EA17032100  | M 441 61                  | STM GEN B BLDWN SMPL     | N/A           |
| Z5 2993 A  | LIMIT SWITCH | SA           | TYPE 304    | T 113 103                 | SG LP 1 FDN BYP VLV TRIP | MILD          |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT E-ELECTRICAL PENETRATION F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS

Amendment 5  
(August 1988)

ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT      | MANUFACTURER | MODEL       | LOCATION<br>#BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER |
|------------|----------------|--------------|-------------|---------------------------|-----------------------------|---------------|
| ZS 2993 B  | LIMIT SWITCH   | SA           | TYPE 304    | T 113 103                 | SG LP 2 FDM BYP VLV TRIP    | MILD          |
| ZS 2993 C  | LIMIT SWITCH   | SA           | TYPE 304    | T 113 103                 | SG LP 3 FDM BYP VLV TRIP    | MILD          |
| ZS 2993 D  | LIMIT SWITCH   | SA           | TYPE 304    | T 113 103                 | SG LP 4 FDM BYP VLV TRIP    | MILD          |
| ZS 3071 A  | LIMIT SWITCH   | NAMCO        | D2400XR2    | T 91 45                   | TURB TRIP & THROT VLV       | MILD          |
| ZS 3071 B  | LIMIT SWITCH   | NAMCO        | D2400XR2    | T 91 45                   | TURB TRIP & THROT VLV       | MILD          |
| ZS 3287    | LIMIT SWITCH   |              |             | F 234 45                  | COM ISLN CLASS II EQUIP     | MILD          |
| ZS 3288    | LIMIT SWITCH   |              | OPD-AR      | F 234 45                  | COM ISLN CLASS II EQUIP     | EXEMPT        |
| ZS 3303    | SOLENOID VALVE |              |             | A 164 45                  | COM ISLN CLASS II EQUIP 1   | MILD          |
| ZS 3304    | SOLENOID VALVE |              |             | A 164 45                  | COM ISLN CLASS II EQUIP 1   | MILD          |
| ZS 3712 A  | LIMIT SWITCH   | NAMCO        | D2400X      | T 85 45                   | SVCE MTR TO DSL GEN AIR CLR | MILD          |
| ZS 3712 B  | LIMIT SWITCH   | NAMCO        | D2400X2SR   | T 86 45                   | SVCE MTR TO DSL GEN AIR CLR | MILD          |
| ZS 3714    | LIMIT SWITCH   | NAMCO        | D2400X2SR   | T 86 45                   | SW BSTR NON-CRITICAL ISLN   | MILD          |
| ZS 3720 A  | LIMIT SWITCH   | NAMCO        | D2400X-2SR  | A 164 45                  | SW TO HVAC RM CLR           | EXEMPT        |
| ZS 3720 B  | LIMIT SWITCH   | NAMCO        | D2400X-2SR  | A 164 45                  | SW TO HVAC RM CLR           | EXEMPT        |
| ZS 3725    | LIMIT SWITCH   | NAMCO        | D2400X      | T 85 45                   | SW NON-CRITICAL ISLN        | MILD          |
| ZS 3803    | LIMIT SWITCH   | NAMCO        | D2400X2SR   | I 394 23                  | SW DOMESTIC MTR SPLY        | MILD          |
| ZS 3804    | LIMIT SWITCH   | NAMCO        | D2400X2SR   | I 394 23                  | SW DOMESTIC MTR SPLY        | MILD          |
| ZS 4000    | LIMIT SWITCH   | NAMCO        | EA-17032100 | P 170 63                  | REAC COOL DR TK N2 SPLY     | RDC-84-103    |
| ZS 4000 B1 | LIMIT SWITCH   | NAMCO        | EA170       | P 170 43                  | REAC COOL DR TK N2 SPLY     | 52.4.2        |

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT    | MANUFACTURER          | MODEL       | LOCATION<br>#BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|--------------|-----------------------|-------------|---------------------------|--------------------------------|---------------|
| Z5 4000 B2 | LIMIT SWITCH | NAMCO                 | EA170       | P 170 63                  | REAC COOL DR TK N2 SPLY        | 52.4.2        |
| Z5 4006    | LIMIT SWITCH | HONEYWELL             | DTF2-2RN-RH | P 169 45                  | N2AC COOL DR TK OUT            | RDC-84-103    |
| Z5 4006 B1 | LIMIT SWITCH | NAMCO                 | EA170       | P 169 45                  | REAC COOL DR TK OUT            | 52.4.2        |
| Z5 4006 B2 | LIMIT SWITCH | NAMCO                 | EA170       | P 169 45                  | REAC COOL DR TK OUT            | 52.4.2        |
| Z5 4181    | LIMIT SWITCH | HONEYWELL             | DTF2-2RN-RH | P 170 45                  | CNT SUMP PMP'S DISCH / CV      | RDC-84-103    |
| Z5 4181 B1 | LIMIT SWITCH | NAMCO                 | EA170       | P 170 45                  | CNT SUMP PMP'S DISCH / CV      | 52.4.2        |
| Z5 4181 B2 | LIMIT SWITCH | NAMCO                 | EA170       | P 170 45                  | CNT SUMP PMP'S DISCH / CV      | 52.4.2        |
| Z5 4301 A1 | LIMIT SWITCH | NAMCO                 | EA170       | P 185 63                  | GAS RAD M LN VLV CV4301        | 52.4.2        |
| Z5 4301 A2 | LIMIT SWITCH | NAMCO                 | EA170       | P 185 63                  | GAS RAD M LN VLV CV4301        | 52.4.2        |
| Z5 4470    | LIMIT SWITCH | NAMCO                 | EA17032100  | M 440 61                  | SVCE AIR SPLY TO CNT           | RDC-84-103    |
| Z5 4470 A1 | LIMIT SWITCH | NAMCO                 | EA180       | M 436 61                  | SVCE AIR SPLY TO CNT           | 65.4.2        |
| Z5 4470 A2 | LIMIT SWITCH | NAMCO                 | EA180       | M 436 61                  | SVCE AIR SPLY TO CNT           | 65.4.2        |
| Z5 4471    | LIMIT SWITCH | NAMCO                 | EA17032100  | M 440 61                  | INSTR AIR SPLY TO CNT          | RDC-84-103    |
| Z5 4471 B1 | LIMIT SWITCH | NAMCO                 | EA180       | M 436 61                  | INSTR AIR SPLY TO CNT          | 65.4.2        |
| Z5 4471 B2 | LIMIT SWITCH | NAMCO                 | EA180       | M 436 61                  | INSTR AIR SPLY TO CNT          | 65.4.2        |
| Z5 5075    | LIMIT SWITCH | MICROSWITCH/HONEYWELL | DTF2-2RN/RH | A 178 45                  | REFUEL MTR TO P208 SUCT CHAN1  | EXEMPT        |
| Z5 5076    | LIMIT SWITCH | MICROSWITCH           | DTF2-2RN/RH | A 178 45                  | REFUEL MTR TO P208 SUCT CHAN2  | SEE E-2       |
| Z5 5652 A  | LIMIT SWITCH | MICROSWITCH           | X84504-LSY  | E 358 54                  | ACCUM COMMON SAMPLE ISOL VALVE | 73. ...2      |
| Z5 5652 B  | LIMIT SWITCH | MICROSWITCH           | X84504-LSY  | E 358 54                  | ACCUM COMMON SAMPLE ISOL VALVE | 73.4.2        |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS

TABLE 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT    | MANUFACTURER | MODEL      | LOCATION<br>#BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|------------|--------------|--------------|------------|---------------------------|--------------------------------|---------------|
| ZS 5655 A  | LIMIT SWITCH | MICROSWITCH  | X84505-LSY | E 358 54                  | RCS HOT LEGS SMP ISOL VLV/PASS | 73.4.2        |
| ZS 5655 B  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 54                  | RCS HOT LEGS SMP ISOL VLV/PASS | 73.4.2        |
| ZS 5657 A  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 54                  | PRSRZ LIQ SPACE SMP ISOL VALVE | 73.4.2        |
| ZS 5657 B  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 54                  | PRSRZ LIQ SPACE SMP ISOL VALVE | 73.4.2        |
| ZS 5659 A  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 54                  | PRSRZ VAP SPACE SMP ISOL VALVE | 73.4.2        |
| ZS 5659 B  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 54                  | PRSRZ VAP SPACE SMP ISOL VALVE | 73.4.2        |
| ZS 5661 A  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 51                  | RCDT SMPL TO AUTO GAS ANAL     | 73.4.2        |
| ZS 5661 B  | LIMIT SWITCH | MICROSWITCH  | X84504-LSY | E 358 51                  | RCDT SMPL TO AUTO GAS ANAL     | 73.4.2        |
| ZS 8025    | LIMIT SWITCH | NAMCO        | EA17015302 | E 358 51                  | PRSRZ RLF TK TO AUTO GAS ANAL  | RDC-84-103    |
| ZS 8025 B1 | LIMIT SWITCH | NAMCO        | EA170      | E 358 51                  | PRSRZ RLF TK TO AUTO GAS ANAL  | 52.4.2        |
| ZS 8025 B2 | LIMIT SWITCH | NAMCO        | EA170      | E 358 51                  | PRSRZ RLF TK TO AUTO GAS ANAL  | 52.4.2        |
| ZS 8026    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 54                 | PRSRZ RLF TK TO AUTO GAS ANAL  | 2.4.2         |
| ZS 8028    | LIMIT SWITCH | NAMCO        | EA180      | P 168 45                  | PRI MKUP NTR TO PRT            | 42.4.2/59.4.2 |
| ZS 8033    | LIMIT SWITCH |              |            | A 364 45                  | N2 TO PRSRZ RLF TK             | RDC-84-103    |
| ZS 8033 B1 | LIMIT SWITCH | NAMCO        | EA170      | P 168 45                  | N2 TO PRSRZ RLF TK             | 52.4.2        |
| ZS 8033 B2 | LIMIT SWITCH | NAMCO        | EA170      | P 168 45                  | N2 TO PRSRZ RLF TK             | 52.4.2        |
| ZS 8149 A  | LIMIT SWITCH | NAMCO        | EA180      | C 085B 66                 | RCS LTDWN ORF LN               | 2.4.2         |
| ZS 8149 B  | LIMIT SWITCH | NAMCO        | EA180      | C 085B 66                 | RCS LTDWN ORF LN               | 2.4.2         |
| ZS 8149 C  | LIMIT SWITCH | NAMCO        | EA180      | C 085B 66                 | RCS LTDWN ORF LN               | 2.4.2         |

\* BUILDING CODE: A=AUXILIARY BUILDING C=CONTAINMENT E=ELECTRICAL PENETRATION F=FUEL BUILDING H=MAIN STEAM SUPPORT STRUCTURE P=PIPE PENETRATION T=TURBINE BUILDING G=GENERIC COMPONENTS USED IN MANY LOCATIONS

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

10 CFR 50.49 MASTER LIST

| PLANT ID # | COMPONENT    | MANUFACTURER | MODEL      | LOCATION<br>BLDG./RM/ELV | SERVICE                      | EQS<br>NUMBER |
|------------|--------------|--------------|------------|--------------------------|------------------------------|---------------|
| Z5 8152    | LIMIT SWITCH | NAMCO        | EA180      | P 185 77                 | CV 8152                      | 42.4.2/59.4.2 |
| Z5 8700 A  | LIMIT SWITCH | NAMCO        | EA17011302 | A 125 5                  | M08811A OPEN PERMISSIVE      | EXEMPT        |
| Z5 8700 B  | LIMIT SWITCH | NAMCO        | EA17011302 | A 123 5                  | M08811B OPEN PERMISSIVE      | EXEMPT        |
| Z5 8701 A  | LIMIT SWITCH | NAMCO        | EA180      | C 085B 61                | M08804B OPEN PERMISSIVE      | 2.4.2         |
| Z5 8702 A  | LIMIT SWITCH | NAMCO        | EA180      | C 185A 62                | M08804A OPEN PERMISSIVE      | 42.4.2        |
| Z5 8804 A  | LIMIT SWITCH | NAMCO        | EA17011302 | A 127 5                  | RHR HX A OUT TO CHARGING PPS | EXEMPT        |
| Z5 8804 B  | LIMIT SWITCH | NAMCO        | EA17011302 | A 122 5                  | RHR HX B OUT TO SI PPS       | EXEMPT        |
| Z5 8813    | LIMIT SWITCH | NAMCO        | EA17011302 | A 148 25                 | SI PHP MIN FL ISL/M08804AAB  | EXEMPT        |
| Z5 8814    | LIMIT SWITCH | NAMCO        | EA17011302 | A 146 25                 | SI PHP MIN FL ISL/M0 8804A   | EXEMPT        |
| Z5 8823    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 59                | SI TEST LN VLV               | 2.4.2         |
| Z5 8824    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 56                | SI TEST LN VLV               | 2.4.2         |
| Z5 8825    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 56                | RHR LP OUT ISLN TO SI TEST   | 42.4.2/59.4.2 |
| Z5 8843    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 56                | SI TEST LN VLV               | 42.4.2/59.4.2 |
| Z5 8870 A  | LIMIT SWITCH | NAMCO        | EA180      | A 141 31                 | CV8870A                      | 42.4.2/59.4.2 |
| Z5 8870 B  | LIMIT SWITCH | NAMCO        | EA180      | A 141 31                 | CV8870B                      | 42.4.2/59.4.2 |
| Z5 8871    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 58                | ACCUM CVCS HT ISLN           | 2.4.2         |
| Z5 8880    | LIMIT SWITCH | NAMCO        | EA180      | P 185 63                 | N2 LN TO ACCUM TK ISLN VLV   | 42.4.2/59.4.2 |
| Z5 8881    | LIMIT SWITCH | NAMCO        | EA180      | C 085B 63                | HOT LEG/SI FILL LN VLV       | 42.4.2/59.4.2 |
| Z5 8888    | LIMIT SWITCH | NAMCO        | EA180      | P 185 63                 | SI PHP-ACUM TEST LN ISLN     | 42.4.2/59.4.2 |

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Amendment 5  
(August 1988)

ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT               | MANUFACTURER       | MODEL                   | LOCATION<br>*BLDG./RM/ELV | SERVICE                     | EQS<br>NUMBER  |
|-------------|-------------------------|--------------------|-------------------------|---------------------------|-----------------------------|----------------|
| Z5 4964     | LIMIT SWITCH            | NAMCO              | EA180                   | P 168 45                  | ACCUM TO HOLD-UP TK ISL VLV | 42.4.2         |
| Z5 10001 B1 | LIMIT SWITCH            | NAMCO              | EA170                   | E 358 93*                 | CONTAINMENT PURGE SUPPLY    | 52.4.2         |
| Z5 10001 B2 | LIMIT SWITCH            | NAMCO              | EA170                   | E 358 93*                 | CONTAINMENT PURGE SUPPLY    | 52.4.2         |
| Z5 10004 B1 | LIMIT SWITCH            | NAMCO              | EA170                   | A 226 93*                 | CONTAINMENT PURGE EXHAUST   | 52.4.2         |
| Z5 10004 B2 | LIMIT SWITCH            | NAMCO              | EA170                   | A 226 93*                 | CONTAINMENT PURGE EXHAUST   | 52.4.2         |
| Z5 10014 B1 | LIMIT SWITCH            | NAMCO              | EA170                   | P 219 77                  | CHLD MTR RTN                | 52.4.2         |
| Z5 10014 B2 | LIMIT SWITCH            | NAMCO              | EA170                   | P 219 77                  | CHLD MTR RTN                | 52.4.2         |
| Z5 10015 B1 | LIMIT SWITCH            | NAMCO              | EA170                   | P 219 77                  | CHLD MTR SPLY               | 52.4.2         |
| Z5 10015 B2 | LIMIT SWITCH            | NAMCO              | EA170                   | P 219 77                  | CHLD MTR SPLY               | 52.4.2         |
| 65 L1       | PRESSURE SWITCH         | UNITED ELECTRIC    | 258                     | A 153 25                  | CCP A AUX LUBE OIL PHP      | EXEMPT         |
| 65 L2       | PRESSURE SWITCH         | UNITED ELECTRIC    | 258                     | A 156 25                  | CCP B AUX LUBE OIL PHP      | EXEMPT         |
| *A11-N00258 | POWER CABLE             | OKONITE            | 1/C, 750KCH AL, SKV, EP | A CBL4 N/A                | VARIOUS                     | 29.4.2         |
| *A13-N00258 | POWER CABLE             | OKONITE            | 1/C, 350KCH AL, SKV, EP | A CBL4 N/A                | VARIOUS                     | 29.4.2         |
| *B15-N00277 | POWER CABLE             | GENERAL CABLE      | 3/C, 88 ANG             | G CBL1 N/A                | VARIOUS                     | 4.4.2          |
| *CX1        | SEAL (ECSA)             | CONUX              | ALL MODELS              | G SEAL N/A                | VARIOUS                     | 31.4.2, 31.4.4 |
| *CX2        | SEAL (QUICK DISCONNECT) | NAMCO              | EC-210                  | G SEAL N/A                | VARIOUS                     | 59.4.2         |
| *C05-N00277 | POWER AND CONTROL CABLE | GENERAL CABLE      | 5/C, #14, ANG           | G CBL1 N/A                | VARIOUS                     | 4.4.2          |
| *I01-N00323 | INSTRUMENT CABLE        | AMERICAN INS. WIRE | 2/C, TH, #16 ANG.       | G CBL2 N/A                | VARIOUS                     | 3.4.2          |
| *I02-N00323 | INSTRUMENT CABLE        | AMERICAN INS. WIRE | 2/C, SH, #16 ANG.       | G CBL2 N/A                | VARIOUS                     | 3.4.2          |

\* BUILDING CODE: A-AUXILIARY BUILDING C-CONTAINMENT F-FUEL BUILDING M-MAIN STEAM SUPPORT STRUCTURE P-PIPE PENETRATION T-TURBINE BUILDING G-GENERIC COMPONENTS USED IN MANY LOCATIONS

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT                    | MANUFACTURER           | MODEL               | LOCATION<br>#BLDG./RM/ELV | SERVICE                          | EQS<br>NUMBER |
|-------------|------------------------------|------------------------|---------------------|---------------------------|----------------------------------|---------------|
| *103-N00323 | INSTRUMENT CABLE             | AMERICAN INS. WIRE     | 3/C,SH,#16 AWG.     | G CBL2 N/A                | VARIOUS                          | 3.4.2         |
| *104-N00323 | INSTRUMENT CABLE             | AMERICAN INS. WIRE     | 4/C,SH,#16 AWG.     | G CBL2 N/A                | VARIOUS                          | 3.4.2         |
| *104-N21662 | INSTRUMENT CABLE             | EATON/SAMUEL MOORE     | 2PR,SH,#16 AWG.,7/5 | A CBL4                    | 77-<br>THERMAL CONDUCTIVITY CELL | 75.4.2        |
| *110        | INSTRUMENT AND CONTROL CABLE | GENERAL ELECTRIC       | 1C #16AWG,SIS       | G CBL1 N/A                | VARIOUS                          | 58.4.2        |
| *111        | INSTRUMENT AND CONTROL CABLE | GENERAL ELECTRIC       | 1C #16AWG,SIS       | G CBL1 N/A                | VARIOUS                          | 58.4.2        |
| *112-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *113-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *115-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *117-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *118-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *120-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *121-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *122-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *123-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *124-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *125-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *132-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *134-N29253 | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | BOSTRAD 7E          | G CBL1 N/A                | VARIOUS                          | 41.4.2        |
| *JN-N10908  | INSTRUMENT CABLE             | BOSTON INGUCLATED WIRE | 4C/5,#16AWG         | G CBL1 N/A                | VARIOUS                          | 41.4.2        |

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07/26/88

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## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT               | MANUFACTURER          | MODEL         | LOCATION<br>*BLDG./RM/ELV | SERVICE                        | EQS<br>NUMBER |
|-------------|-------------------------|-----------------------|---------------|---------------------------|--------------------------------|---------------|
| *N02-N00277 | POWER AND CONTROL CABLE | GENERAL CABLE         | 2/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 4.4.2         |
| *N02-N00323 | POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 2/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 3.4.2         |
| *N03-N00277 | POWER AND CONTROL CABLE | GENERAL CABLE         | 3/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 4.4.2         |
| *N03-N00323 | POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 3/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 3.4.2         |
| *N05-N00277 | POWER AND CONTROL CABLE | GENERAL CABLE         | 5/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 4.4.2         |
| *N05-N00323 | POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 5/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 3.4.2         |
| *N07-N00277 | POWER AND CONTROL CABLE | GENERAL CABLE         | 7/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 4.4.2         |
| *N07-N00323 | POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 7/C,#14 AWG.  | G CBL1 N/A                | VARIOUS                        | 3.4.2         |
| *N10        | POWER AND CONTROL CABLE | GENERAL ELECTRIC      | 1C #10AWG,SIS | G CBL1 N/A                | VARIOUS                        | 58.4.2        |
| *N12-N29253 | POWER AND CONTROL CABLE | BOSTON INSULATED WIRE | BOSTRAD 7E    | G CBL1 N/A                | VARIOUS                        | 41.4.2        |
| *N20-N29253 | POWER AND CONTROL CABLE | BOSTON INSULATED WIRE | BOSTRAD 7E    | G CBL1 N/A                | VARIOUS                        | 41.4.2        |
| *N22-N29253 | POWER AND CONTROL CABLE | BOSTON INSULATED WIRE | BOSTRAD 7E    | G CBL1 N/A                | VARIOUS                        | 41.4.2        |
| *N25-N29253 | POWER AND CONTROL CABLE | BOSTON INSULATED WIRE | BOSTRAD 7E    | G CBL1 N/A                | VARIOUS                        | 41.4.2        |
| *N27-N29253 | POWER AND CONTROL CABLE | BOSTON INSULATED WIRE | BOSTRAD 7E    | G CBL1 N/A                | VARIOUS                        | 41.4.2        |
| *N29        | POWER AND CONTROL CABLE | GENERAL ELECTRIC      | 1C #12AWG,SIS | G CBL1 N/A                | VARIOUS                        | 58.4.2        |
| *N30        | POWER AND CONTROL CABLE | GENERAL ELECTRIC      | 1C #14AWG,SIS | G CBL1 N/A                | VARIOUS                        | 58.4.2        |
| *P01-N04683 | POWER CABLE             | OMONITE               | 1/C,500KCM    | G CBL5 N/A                | 125VDC STATION BATTERY CABLING | MILD          |
| *P03-N00277 | POWER CABLE             | GENERAL CABLE         | 1/C,350KCM    | G CBL1 N/A                | VARIOUS                        | 4.4.2         |
| *P05-N00277 | POWER CABLE             | GENERAL CABLE         | 1/C,#4/0 AWG. | G CBL1 N/A                | VARIOUS                        | 4.4.2         |

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TABLE 3-2

ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| COMPONENT                          | MANUFACTURER          | MODEL          | LOCATION<br>*BLDG./RM/ELV |          | SERVICE | EQS<br>NUMBER |
|------------------------------------|-----------------------|----------------|---------------------------|----------|---------|---------------|
| *P01-00277 POWER CABLE             | BOSTON INSULATED WIRE | BOSTRAD 7E     | G                         | CBL1 N/A | VARIOUS | 41.4.2        |
| *P02-00277 POWER CABLE             | GENERAL CABLE         | 1/C, #1/0 AWG. | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P03-00277 POWER CABLE             | BOSTON INSULATED WIRE | BOSTRAD 7E     | G                         | CBL1 N/A | VARIOUS | 41.4.2        |
| *P04-00277 POWER CABLE             | BOSTON INSULATED WIRE | BOSTRAD 7E     | G                         | CBL1 N/A | VARIOUS | 41.4.2        |
| *P11-00277 POWER CABLE             | GENERAL CABLE         | 1/C, #2 AWG.   | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P12-00277 POWER CABLE             | BOSTON INSULATED WIRE | BOSTRAD 7E     | G                         | CBL1 N/A | VARIOUS | 41.4.2        |
| *P13-00277 POWER CABLE             | GENERAL CABLE         | 3/C, #8 AWG.   | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P14-00323 POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 3/C, #8 AWG.   | G                         | CBL1 N/A | VARIOUS | 3.4.2         |
| *P15-00377 POWER CABLE             | GENERAL CABLE         | 3/C, #10 AWG.  | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P16-00323 POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 3/C, #10 AWG.  | G                         | CBL1 N/A | VARIOUS | 3.4.2         |
| *P17-00277 POWER CABLE             | GENERAL CABLE         | 3/C, #12 AWG.  | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P17-00323 POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 3/C, #12 AWG.  | G                         | CBL1 N/A | VARIOUS | 3.4.2         |
| *P18-00277 POWER CABLE             | GENERAL CABLE         | 3/C, #6 AWG.   | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P18-00323 POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 3/C, #6 AWG.   | G                         | CBL1 N/A | VARIOUS | 3.4.2         |
| *P19-00323 POWER AND CONTROL CABLE | AMERICAN INS. WIRE    | 1/C, #12 AWG.  | G                         | CBL5 N/A | VARIOUS | MILD          |
| *P20-00277 POWER CABLE             | GENERAL CABLE         | 2/C, #12 AWG.  | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P20-00323 POWER AND CONTROL CABLE | AMERICAN INSUL. WIRE  | 2/C, #12 AWG.  | G                         | CBL1 N/A | VARIOUS | 3.4.2         |
| *P22-00277 POWER CABLE             | GENERAL CABLE         | 2/C, #10 AWG.  | G                         | CBL1 N/A | VARIOUS | 4.4.2         |
| *P22-00323 POWER CABLE             | AMERICAN INSUL. WIRE  | 2/C, #10 AWG.  | G                         | CBL1 N/A | VARIOUS | 3.4.2         |

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TABLE 3 - 2

ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION  
10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT             | MANUFACTURER          | MODEL                   | LOCATION<br>*BLDG./RM/ELV | SERVICE                       | EQS<br>NUMBER |
|-------------|-----------------------|-----------------------|-------------------------|---------------------------|-------------------------------|---------------|
| *P23-N00277 | POWER CABLE           | GENERAL CABLE         | 4/C, #10 AWG.           | G CBL1 N/A                | VARIOUS                       | 4.4.2         |
| *P23-N00323 | POWER CABLE           | AMERICAN INSUL. WIRE  | 4/C, #10 AWG            | G CBL1 N/A                | VARIOUS                       | 3.4.2         |
| *P24-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *P32-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *P37-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *P40-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *P41-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *P42-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *P44-N29253 | POWER CABLE           | BOSTON INSULATED WIRE | BOSTRAD 7E              | G CBL1 N/A                | VARIOUS                       | 41.4.2        |
| *RG6        | INSTRUMENT CABLE      | BIM/VICTOREEN         | 878-1-9                 | G CBL1 N/A                | CNT AREA RADIATION MONITORING | 28.4.2/28.4.4 |
| *RG7        | INSTRUMENT CABLE      | BIM                   | 1/C, #24AWG, 300V, COAX | G CBL1 N/A                | CNT AREA RADIATION MONITORING | 28.4.2        |
| *SPICE      | CABLE SEAL            | RAYCHEM               | WCSF-N                  | G SEAL N/A                | VARIOUS                       | 9.4.2         |
| *S02-N00323 | INSTRUMENT CABLE      | AMERICAN INS WIRE     | 2/C, SH, #16 AWG        | G CBL2 N/A                | VARIOUS                       | 3.4.2         |
| *TP5        | TERMINATION TAPE      | SCOTCH (3M)           | #33 (PVC)               | G TAPE N/A                | TERMIN INSULN                 | 36.4.2        |
| *TP6        | TERMINATION TAPE      | SCOTCH (3M)           | #2510                   | A TAPE N/A                | TERMIN INSULN                 | 36.4.2        |
| *TP7        | TERMINATION TAPE      | SCOTCH (3M)           | SCOTCHFILL              | A TAPE N/A                | TERMIN INSULN                 | 36.4.2        |
| *TS4        | HI CABLE / CONNECTORS | COMBUSTION ENG        |                         | C CBL1 N/A                | CORE EXIT TC                  | 71.4.2        |
| *TS5        | HI CABLE / CONNECTORS | COMBUSTION ENG.       |                         | C CBL1 N/A                | CORE EXIT TC                  | 71.4.2        |
| *TXC        | TRIAX CABLE           | GAMMA METRICS         | 200712048               | C OBSB >53                | NEUTRON FLUX MONITOR          | 72.4.2        |

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TABLE 3 - 2

## ELECTRICAL EQUIPMENT ENVIRONMENTAL QUALIFICATION

## 10 CFR 50.49 MASTER LIST

| PLANT ID #  | COMPONENT        | MANUFACTURER       | MODEL           | LOCATION<br>*BLDG./RM/ELV | SERVICE | EQS<br>NUMBER |
|-------------|------------------|--------------------|-----------------|---------------------------|---------|---------------|
| *202-N00323 | INSTRUMENT CABLE | AMERICAN INS. WIRE | 2/C,SH,#16 AWG. | G CBL1 N/A                | VARIOUS | 3.4.2         |
| *203-N00323 | INSTRUMENT CABLE | AMERICAN INS. WIRE | 3/C,SH,#16 AWG. | G CBL1 N/A                | VARIOUS | 3.4.2         |

TOTAL COMPONENTS IN HARSH ENVIRONMENT: 218

second condition assumed the RCS remained intact, with the same source term as above contained within the RCS.

The TIDs were determined for several dose point locations, both inside and outside of the Containment. In addition, doses were calculated for equipment operation times ranging from 1 hour to 1 year, in order to determine qualification levels for the maximum time equipment is required to function following an accident.

Maximum  $\gamma$  TID values for general areas at Trojan are summarized in Table 8A-1 and Figures 8A-1 through 8A-10. These values are conservative estimates based on contact dose rates from the largest sources in each area.

Beta TIDs for materials in contact with reactor coolant and materials exposed to the Containment atmosphere are also provided in Table 8A-1. Figures 8A-11 and 8A-12 provide volume correction factors used to determine  $\beta$  integrated doses for finite volumes in the Containment atmosphere.

The 40 year background radiation TIDs are presented in Table 8A-1 for areas inside and outside Containment. These values are conservative estimates based on the highest expected sources in each area.

The overall TID to a component was determined by summing the normal background dose for 40 years and 110 percent of the  $\gamma$  and  $\beta$  accident doses at that location for the assumed time the component is required to operate post accident.

Appendix 8.A outlines the method for specific component calculations and contains example dose calculations for typical locations inside and outside the Containment.

#### 4.4.1.2 Radiation Damage Threshold Levels

Because different materials exhibit a wide range of tolerance to radiation damage, radiation threshold levels have been established to exempt certain

equipment from demonstration of its radiation qualification by testing or analysis. The bases for establishing threshold levels are discussed below; selected threshold values are given in Section 4.4.2.

References 6 through 8 provide surveys of radiation threshold effects on organic materials and electronic devices. Because inorganic and metallic materials are much less susceptible to radiation damage they are not separately considered as part of the qualification review.

Information presented in Reference 6 concerning organic materials used in Plant equipment suggests an exclusion from test or further analysis should be allowed for nonelectronic equipment subjected to  $10^4$  rads or less. Nonelectronic equipment which contains no Teflon and is subjected to  $<10^5$  rads should likewise be excluded. At these levels, there is no significant degradation of mechanical or permanent electrical properties of the listed materials. Also at this level, no indications were found in the literature search of significant synergistic effects of radiation combined with other environmental stresses or sensitization to subsequently imposed stresses. In general, equipment failures occur at some higher level involving considerably more than threshold degradation of component materials.

Reference 7 essentially confirms the results of Reference 6. Although four materials in addition to fluorocarbons (Teflon) were identified as having a change threshold between  $10^4$  and  $10^5$  rads, the 25 percent damage dose level for these materials ranged above  $10^5$  rads. For Teflon, the 25 percent damage level is quoted in the range of 3 to 5 x  $10^4$  rads. For use as an evaluation criterion, the 25 percent damage level is considered more indicative of radiation damage than the lowest reported change threshold because the changes are real at this level and are not an artifact of the experiment or due to sample variation.

Chapter 5 of Reference 8 summarizes the radiation tolerances of various electronic components. Guidelines are also presented for component selection. Radiation damage thresholds are quoted as low as  $10^3$  rads

- (2) DBE test profile to ensure equivalent thermal degradation of test profile is equal to or exceeds the qualification requirement temperature profile (see Figure 4-4).
- (3) Qualification requirement temperature profile (see Figure 4-4) for comparison in (2) above.
- (4) Post-accident operating time.

To illustrate use of the Arrhenius method, consider the following example where post-accident operating time is determined. Assume the required post-accident operating time is 1 year at 120°F (322°K). A conservative representation of the example specimen DBE test profile is given by:

| Interval, $t_a$ | Temperature, $T_a$ |
|-----------------|--------------------|
| 0.5 hours       | 250°F (394°K)      |
| 1.4 hours       | 120°F (322°K)      |
| 24 hours        | 250°F (394°K)      |
| 1000 hours      | 220°F (377°K)      |

Using a conservative activation energy  $\phi = 0.5$ , and applying the criteria of Section 4.5.2.1(3) below, post-accident operating time is determined from plateau portion of above curve (220°F):

$$t_{\text{equivalent}} = 1000 \text{ hours} \exp \left[ \frac{.5 \text{ eV}}{.8617 \times 10^{-4} \text{ eV/}^\circ\text{K}} \left( \frac{1}{322^\circ\text{K}} - \frac{1}{377^\circ\text{K}} \right) \right] \quad (5)$$

$$= 13,859 \text{ hours at } 120^\circ\text{F}$$

This far exceeds the required post-accident operating time of 1 year (8760 hours).

Similar calculations are used to determine equipment qualified life and equivalent thermal degradation of the DBE test profile.

#### 4.5.2.1 Selection of Activation Energy for Use In Arrhenius Methodology

Limiting activation energies provided by the equipment vendor or test laboratory are used in extrapolation for pre-aging tests or post-accident operating times. When activation energies are not provided by equipment vendor, the selection of activation energies should be based upon a detailed review of oven-aging data for the materials involved in the component being tested. These activation energies should be used in all aging tests subject to the following criteria:

- (1) Thermal pre-accident aging is to be done at a temperature equal to or less than the maximum temperature the activation energy was determined at.
- (2) Extrapolation of LOCA test data to determine post-accident operating time may be performed using the activation energy determined in a dry oven, as atmospheric conditions in the LOCA test chamber closely approximate those found in an actual post-LOCA Containment atmosphere.

Using the above dry oven activation energy will result in a more conservative approach, since the high humidity environment of the LOCA test will exclude oxygen from the test chamber resulting in less thermal degradation.

- (3) The above extrapolation of LOCA test data to determine post-accident operating time should only be performed on the plateau portion of the temperature test curve that is equal to or less than the maximum temperature the activation energy was determined at.

The above criteria should be applied in all cases unless another approach can be justified. If the activation energy of an organic material used in the component cannot be determined, a value of 0.5 eV can be assumed.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION     |           |              |       | NORMAL          |      |                 |     |              |     | ACCIDENT       |          |              |                    |       |       |                |                  |
|--------------|-----------|--------------|-------|-----------------|------|-----------------|-----|--------------|-----|----------------|----------|--------------|--------------------|-------|-------|----------------|------------------|
|              |           |              |       | TEMPERATURE (F) |      | PRESSURE (PSIG) |     | HUMIDITY (Z) |     | RADTN * (RADS) | PEAK     |              | RADIATION ‡ (RADS) |       |       |                |                  |
| BUILDING     | ELEV (FT) | ROOM #/FLOOR | ENVIR | MAX             | NOMH | MIN             | MAX | NOMH         | MIN | MAX            | TEMP (F) | PRESS (PSIG) | HUMID (Z)          | GAMMA | BETA  | TABLE 8A-1 REF |                  |
| AUXILIARY    | 5-93      | 118          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 1.1E3              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 120          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 1.1E3              | N/A   | 1.1E7 | N/A            | G                |
| AUXILIARY    | 5         | 121          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 1.1E3              | N/A   | 1.1E7 | N/A            | G                |
| AUXILIARY    | 5         | 122          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 4.4E7 | N/A            | K                |
| AUXILIARY ** | 5         | 122          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 1.4E8 | 1.5E8          | L                |
| AUXILIARY    | 5         | 123          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 4.4E7 | N/A            | K                |
| AUXILIARY    | 5         | 125          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 4.4E7 | N/A            | K                |
| AUXILIARY    | 5         | 126          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 127          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 4.4E7 | N/A            | K                |
| AUXILIARY ** | 5         | 127          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 1.4E8 | 1.5E3          | L                |
| AUXILIARY    | 5         | 128          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 130          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 1.1E3              | N/A   | 1.1E7 | N/A            | G                |
| AUXILIARY    | 5         | 131          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 132          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 133          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 134          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 6.4E3              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 135          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 4.5E5              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |
| AUXILIARY    | 5         | 136          | HARSH | 104             | 80   | 50              | ATM | ATM          | ATM | 95             | N/A      | 20           | 1.1E3              | N/A   | 5.5E3 | N/A            | HIGHER OF M OR J |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

‡ RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE BA-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

\*\* EQUIPMENT LOCATED INSIDE RHR PIPING.



## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION  |           |             |       | NORMAL          |     |                 |     |              |     | ACCIDENT           |          |              |                    |       |                  |
|-----------|-----------|-------------|-------|-----------------|-----|-----------------|-----|--------------|-----|--------------------|----------|--------------|--------------------|-------|------------------|
|           |           |             |       | TEMPERATURE (F) |     | PRESSURE (PSIG) |     | HUMIDITY (Z) |     | RADIATION * (RAUS) | PEAK     |              | RADIATION 2 (RAUS) |       |                  |
| BUILDING  | ELEV (FT) | ROOM NUMBER | ENVTR | MAX             | MIN | MAX             | MIN | MAX          | MIN |                    | TEMP (F) | PRESS (PSIG) | HUMID (Z)          | GAMMA | BETA             |
| AUXILIARY | 5         | 137         | HARSH | 104             | 60  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 5-25      | 146         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 4.4E7              | N/A   | K                |
| AUXILIARY | 5-25      | 147         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 4.4E7              | N/A   | K                |
| AUXILIARY | 10        | 129         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 1.1E7              | N/A   | G                |
| AUXILIARY | 25        | 141         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 1.1E7              | N/A   | G                |
| AUXILIARY | 25        | 142         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 143         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 144         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 145         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 148         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 149         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 1.1E7              | N/A   | G                |
| AUXILIARY | 25        | 150         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 151         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 4.4E7              | N/A   | K                |
| AUXILIARY | 25        | 152         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 153         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 1.1E7              | N/A   | G                |
| AUXILIARY | 25        | 154         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |
| AUXILIARY | 25        | 156         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 1.1E7              | N/A   | G                |
| AUXILIARY | 25        | 157         | HARSH | 104             | 80  | ATM             | ATM | 95           | ATM | 20                 | N/A      | N/A          | 5.5E3              | N/A   | HIGHER OF M OR J |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

2 RADIATION DOSES GIVEN ARE 1 YEAR POLY-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION  |           |           |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                                 |      |                  |
|-----------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|---------------------------------|------|------------------|
|           |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADYN * (RADS) | PEAK     |            |           | RADIATION $\dot{\Sigma}$ (RADS) |      |                  |
| BUILDING  | ELEV (FT) | ROOM NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                           | BETA | TABLE 8A-1 REF   |
| AUXILIARY | 25        | 158       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 161       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 162       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 163       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 164       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 171       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 172       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 178       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 179       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 45        | 180       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 61        | 186       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 61        | 187       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                           | N/A  | HIGHER OF M OR J |
| AUXILIARY | 61        | 188       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                           | N/A  | K                |
| AUXILIARY | 61        | 191       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                           | N/A  | K                |
| AUXILIARY | 61        | 192       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                           | N/A  | K                |
| AUXILIARY | 61        | 193       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                           | N/A  | K                |
| AUXILIARY | 61        | 194       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                           | N/A  | K                |
| AUXILIARY | 61        | 197       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                           | N/A  | K                |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

② RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

07/26/88

TABLE 4-1

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## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION  |           |           |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                               |      |                  |
|-----------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|-------------------------------|------|------------------|
|           |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION <sup>2</sup> (RADS) |      |                  |
| BUILDINGS | ELEV (FT) | ROOM NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                         | BETA | TABLE 8A-1 REF   |
| AUXILIARY | 61        | 198       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 61        | 199       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 61        | 200       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 61        | 201       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 61        | 202       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 61        | 203       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 61        | 204       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 61        | 205       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 61        | 206       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 77        | 208       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 77        | 209       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 77        | 210       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 77        | 211       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 77        | 212       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 77        | 213       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 77        | 214       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| AUXILIARY | 77        | 215       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| AUXILIARY | 77        | 216       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

<sup>2</sup> RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION                  |           |           |       | NORMAL          |      |     |                 |      |      |              |      |     | ACCIDENT      |          |            |           |                           |       |                  |
|---------------------------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|------|--------------|------|-----|---------------|----------|------------|-----------|---------------------------|-------|------------------|
|                           |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |      | HUMIDITY (%) |      |     | RADTN * (RAD) | PEAK     |            |           | RADIATION $\Sigma$ (RADS) |       |                  |
| BUILDING                  | ELEV (FT) | ROOM NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN  | MAX          | NORM | MIN | BKG           | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                     | BETA  | TABLE 8A-1 REF   |
| FUEL                      | 77        | 217       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 4.5E5         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| AUXILIARY                 | 77        | 218       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 1.1E3         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| FUEL                      | 77        | 270       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 1.1E3         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| AUXILIARY                 | 93        | 221       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 1.1E3         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| AUXILIARY                 | 93        | 222       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 1.1E3         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| AUXILIARY                 | 93        | 223       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 4.5E5         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| AUXILIARY                 | 93        | 224       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 4.5E5         | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| AUXILIARY                 | 93        | 225       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 6.6E3         | N/A      | N/A        | N/A       | 1.1E7                     | N/A   | G                |
| AUXILIARY                 | 93        | 226       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 4.5E5         | N/A      | N/A        | N/A       | 1.1E7                     | N/A   | G                |
| CHLORINE                  | 45        | 397       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2         | N/A      | N/A        | N/A       | 4.0E2                     | N/A   | FOOTNOTE D       |
| CHLORINE                  | 45        | 398       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2         | N/A      | N/A        | N/A       | 4.0E2                     | N/A   | FOOTNOTE D       |
| CHLORINE                  | 45        | 400       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2         | N/A      | N/A        | N/A       | 4.0E2                     | N/A   | FOOTNOTE D       |
| CONTAINMENT $\mathcal{Q}$ | <53       | IBSF      | HARSH | 120             | 110  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 2.2E7         | 303      | 66         | 100       | 6.5E7                     | 2.1E7 | D* AND D         |
| CONTAINMENT               | >=53      | IBSA      | HARSH | 120             | 110  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 2.2E7         | 303      | 66         | 100       | 3.3E7                     | 1.4E8 | A AND C          |
| CONTAINMENT $\mathcal{Q}$ | <53       | OBSF      | HARSH | 120             | 110  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 1.0E7         | 303      | 66         | 100       | 6.5E7                     | 2.1E7 | D* AND D         |
| CONTAINMENT               | 53-93     | OBSB      | HARSH | 120             | 110  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 1.0E7         | 303      | 66         | 100       | 3.3E7                     | 1.4E8 | A AND C          |
| CONTAINMENT               | >93       | OPSA      | HARSH | 120             | 110  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 1.0E7         | 303      | 66         | 100       | 1.3E7                     | 1.4E8 | B AND C          |
| CONTAINMENT               | <130      | PRZR      | HARSH | 145             | 130  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 2.2E7         | 303      | 66         | 100       | 3.3E7                     | 1.4E8 | (HIGH A, B) & C  |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

 $\mathcal{Q}$  RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

 $\mathcal{Q}$  EQUIPMENT LOCATED BELOW POST-LOCA FLOOD LEVEL.

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TABLE 4-1

SHEET 6 OF 14

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION |           |          |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                    |      |                |
|----------|-----------|----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|--------------------|------|----------------|
|          |           |          |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION 3 (RADS) |      |                |
| BUILDING | ELEV (FT) | ROOM NBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA              | BETA | TABLE 8A-1 REF |
| CONTROL  | 45        | 01       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 02       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 03       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 04       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 05       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 06       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 07       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 08       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 09       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 10       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 11       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 12       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 13       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 14       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 15       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 16       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 17       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 18       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D     |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

3 RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION |           |          |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                               |      |                |
|----------|-----------|----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|-------------------------------|------|----------------|
|          |           |          |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION <sup>2</sup> (RADS) |      |                |
| BUILDING | ELEV (FT) | ROOM NBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                         | BETA | TABLE 8A-1 REF |
| CONTROL  | 45        | 19       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 20       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 21       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 22       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 23       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 24       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 25       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 45        | 27       | HARSH | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 61        | 33       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 61        | 34       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 61        | 35       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 61        | 36       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 1   | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 61        | 37       | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 61        | 38       | MILD  | 104             | <95  | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 65        | 39       | MILD  | 104             | <95  | 70  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 65        | 40       | MILD  | 104             | <95  | 70  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 65        | 41       | MILD  | 104             | <95  | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |
| CONTROL  | 77        | 45       | MILD  | 104             | <95  | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D     |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

<sup>2</sup> RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.



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TABLE 4-1

SHEET 8 OF 14

## TROYAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION         |           |           |       | NORMAL          |      |     |                 |      |     |              |      |     |                | ACCIDENT |            |           |                    |      |                  |
|------------------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|--------------------|------|------------------|
|                  |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADYN * (RADS) | PEAK     |            |           | RADIATION 2 (RADS) |      |                  |
| BUILDING         | ELEV (FT) | ROOM NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA              | BETA | TABLE 8A-1 REF   |
| CONTROL          | 77        | 47        | MILD  | 104             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| CONTROL          | 93        | 53        | MILD  | 110             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| CONTROL          | 93        | 54        | MILD  | 110             | 75   | 50  | ATM             | ATM  | ATM | 95           | <50  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| CONTROL          | 105       | 77        | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| ELEC PENETRATION | 45-93     | 358       | HARSH | 105             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| FUEL             | 45        | 228       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 45        | 229       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 45        | 230       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 45-77     | 231       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| FUEL             | 45-77     | 232       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| FUEL             | 45-77     | 233       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| FUEL             | 45        | 234       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 45        | 235       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.4E4          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 45        | 236       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.4E4          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 45        | 237       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 61        | 190       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 61        | 250       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |
| FUEL             | 61        | 253       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF M OR J |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

2 RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION |           |           |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                               |      |                  |
|----------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|-------------------------------|------|------------------|
|          |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION <sup>2</sup> (RADS) |      |                  |
| BUILDING | ELEV (FT) | ROCH NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                         | BETA | TABLE 8A-1 REF   |
| FUEL     | 61        | 254       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 61        | 255       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 61        | 256       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 61        | 257       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 61        | 259       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 61        | 260       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 61        | 261       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 265       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                         | N/A  | K                |
| FUEL     | 77        | 266       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 267       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 268       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 269       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 271       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 272       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 273       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 274       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 77        | 275       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| FUEL     | 93        | 276       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

<sup>2</sup> RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.



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TABLE 4-1

TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

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| TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS |           |           |       |                 |      |     |                 |      |     |              |      |     |                |          |          |            |                               |       |                  | SHEET 10 OF 14 |  |  |
|-----------------------------------------------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|----------|------------|-------------------------------|-------|------------------|----------------|--|--|
| LOCATION                                      |           |           |       | NORMAL          |      |     |                 |      |     |              |      |     |                | ACCIDENT |          |            |                               |       |                  |                |  |  |
| BUILDINGS                                     | ELEV (FT) | ROOM NMBR | ENVIR | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |          |            | RADIATION <sup>2</sup> (RADS) |       |                  |                |  |  |
|                                               |           |           |       | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN |                | BKGRND   | TEMP (F) | PRESS PSIG | HUMID (%)                     | GAMMA | BETA             | TABLE 8A-1 REF |  |  |
| FUEL                                          | 93        | 277       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| FUEL                                          | 93        | 278       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| FUEL                                          | 93        | 280       | HARSH | 80              | N/A  | 65  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 6.6E3          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| FUEL                                          | 93        | 281       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 50  | 4.5E5          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| FUEL                                          | 93        | 282       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| FUEL                                          | 93        | 284       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| INTAKE STRUCTURE                              | 10        | 395       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| INTAKE STRUCTURE                              | 23        | 392       | MILD  | 104             | N/A  | 70  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A      | N/A        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| INTAKE STRUCTURE                              | 23        | 393       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A      | N/A        | 4.0E2                         | N/A   | FOOTNOTE D       |                |  |  |
| INTAKE STRUCTURE                              | 23        | 394       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A      | N/A        | 4.0E2                         | N/A   | FOOTNOTE D       |                |  |  |
| INTAKE STRUCTURE                              | 45        | ROOF      | MILD  | 105             | 80   | -5  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A      | N/A        | 4.0E2                         | N/A   | FOOTNOTE D       |                |  |  |
| MSSS                                          | 45        | 349       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | N/A      | N/A      | N/A        | 4.0E2                         | N/A   | FOOTNOTE D       |                |  |  |
| MSSS                                          | 45        | 350       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 4.5E5          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| MSSS                                          | 45        | 351       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 4.5E5          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| MSSS                                          | 45        | 352       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 4.5E5          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| MSSS                                          | 45        | 435       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 6.6E3          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| MSSS                                          | 45        | 436       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
| MSSS                                          | 45        | 437       | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 4.5E5          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |
|                                               |           |           |       |                 |      |     |                 |      |     |              |      |     | 1.1E3          | 227      | 5        | 100        | 5.5E3                         | N/A   | HIGHER OF M OR J |                |  |  |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

2 RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE

FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.  
<sup>2</sup> RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA<sup>1</sup> PLUS 40 YEAR BACKGROUND TIDS).

FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION  |           |            |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                               |      |                  |
|-----------|-----------|------------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|-------------------------------|------|------------------|
|           |           |            |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION <sup>2</sup> (RADS) |      |                  |
| BUILDING  | ELEV (FT) | 2/00H NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                         | BETA | TABLE 8A-1 REF   |
| MSZS      | 59        | 438        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 227      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 59        | 439        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 227      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 59        | 440        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 227      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 59        | 441        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 227      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 69        | 442        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 69        | 443        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 69        | 444        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 69        | 445        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 93        | 446        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 93        | 447        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 93        | 448        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 93        | 449        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 274      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 100       | 446        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 328      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 100       | 447        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 328      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 100       | 448        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 328      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| MSSS      | 100       | 449        | HARSH | 104             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | 328      | 5          | 100       | 5.5E3                         | N/A  | HIGHER OF M OR J |
| OUTSIDE   | 45        | OUT        | MILD  | 105             | 80   | -5  | ATM             | ATM  | ATM | 100          | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                         | N/A  | FOOTNOTE D       |
| AUXILIARY | 45        | 166        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                         | N/A  | HIGHER OF M OR J |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

<sup>2</sup> RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

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TABLE 4-1

SHEET 12 OF 14

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION         |           |           |       | NORMAL          |      |     |                 |      |     |              |      |     | ACCIDENT       |          |            |           |                    |      |                  |
|------------------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|-----|--------------|------|-----|----------------|----------|------------|-----------|--------------------|------|------------------|
|                  |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |     | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION 2 (RADS) |      |                  |
| BUILDING         | ELEV (FT) | ROOM NMBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA              | BETA | TABLE 8A-1 REF   |
| PIPE PENETRATION | 45        | 167       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3              | N/A  | HIGHER OF H OR J |
| PIPE PENETRATION | 45        | 168       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 1.1E7              | N/A  | G                |
| PIPE PENETRATION | 45        | 169       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| PIPE PENETRATION | 45        | 170       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| PIPE PENETRATION | 61        | 189       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| PIPE PENETRATION | 45-61     | 195       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| PIPE PENETRATION | 63        | 185       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7              | N/A  | K                |
| PIPE PENETRATION | 77        | 219       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 1.1E3          | N/A      | N/A        | N/A       | 1.1E7              | N/A  | G                |
| TURBINE          | 45        | 100       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 101       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 83        | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 84        | HARSH | 105             | 80   | -5  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 85        | MILD  | 116             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 86        | MILD  | 116             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 87        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 89        | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 90        | MILD  | 116             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |
| TURBINE          | 45        | 91        | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2              | N/A  | FOOTNOTE D       |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

2 RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

## TROYAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION    |           |           |       | NORMAL          |      |     |                 |      |      |              |      |     | ACCIDENT       |          |            |           |                           |       |                  |
|-------------|-----------|-----------|-------|-----------------|------|-----|-----------------|------|------|--------------|------|-----|----------------|----------|------------|-----------|---------------------------|-------|------------------|
|             |           |           |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |      | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION $\Sigma$ (RADS) |       |                  |
| BUILDING    | ELEV (FT) | ROOM NMBR | ENVIR | MAX             | NORH | MIN | MAX             | NORH | MIN  | MAX          | NORH | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                     | BETA  | TABLE 8A-1 REF   |
| TURBINE     | 45        | 93        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 45        | 94        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 45        | 95        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 45        | 96        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 45        | 97        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 45        | 99        | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 61        | 102       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 61        | 104       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 61        | 105       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 61        | 106       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 61        | 109       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 63        | 103       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 69        | 107       | MILD  | 104             | N/A  | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 69        | 108       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE     | 93        | 113       | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| CONTAINMENT | N/A       | CBL1 +    | HARSH | 145             | N/A  | 50  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 2.2E7          | 303      | 66         | 100       | 6.5E7                     | 1.4E8 | C AND D          |
| MSSS        | N/A       | CBL2 +    | HARSH | 116             | N/A  | -5  | ATM             | ATM  | ATM  | 100          | N/A  | 20  | 4.5E5          | 328      | 5          | 100       | 5.5E3                     | N/A   | HIGHER OF H OR J |
| OUTSIDE     | N/A       | CBL3 +    | HARSH | 105             | 80   | -5  | ATM             | ATM  | ATM  | 100          | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                     | N/A   | K                |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

② RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

\* THESE DEVICES ARE LOCATED IN MORE THAN ONE AREA OF THE PLANT. ENVIRONMENTAL CONDITIONS ARE MADE UP FROM A SET OF WORST-CASE PARAMETERS. SEE NEXT PAGE FOR DEFINITIONS OF THESE DEVICES.

## TROJAN NUCLEAR PLANT ENVIRONMENTAL CONDITIONS

| LOCATION          |           |          |       | NORMAL          |      |     |                 |      |      |              |      |     | ACCIDENT       |          |            |           |                           |       |                  |
|-------------------|-----------|----------|-------|-----------------|------|-----|-----------------|------|------|--------------|------|-----|----------------|----------|------------|-----------|---------------------------|-------|------------------|
|                   |           |          |       | TEMPERATURE (F) |      |     | PRESSURE (PSIG) |      |      | HUMIDITY (%) |      |     | RADTN * (RADS) | PEAK     |            |           | RADIATION $\Sigma$ (RADS) |       |                  |
| BUILDING          | ELEV (FT) | ROOM NBR | ENVIR | MAX             | NORM | MIN | MAX             | NORM | MIN  | MAX          | NORM | MIN | BKGRND         | TEMP (F) | PRESS PSIG | HUMID (%) | GAMMA                     | BETA  | TABLE 8A-1 REF   |
| AUX. FUEL CONTROL | N/A       | CBL4 *   | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 100          | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                     | N/A   | K                |
| CHLORINE INTAKE   | N/A       | CBL5 *   | MILD  | 116             | N/A  | -5  | ATM             | ATM  | ATM  | 100          | N/A  | 20  | 5.0E2          | N/A      | N/A        | N/A       | 4.0E2                     | N/A   | FOOTNOTE D       |
| TURBINE           | N/A       | CBL6 *   | HARSH | 116             | 80   | -5  | ATM             | ATM  | ATM  | 95           | N/A  | 20  | 5.0E2          | 342      | 5.0        | 100       | 4.0E2                     | N/A   | FOOTNOTE D       |
| N/A               | N/A       | LTG *    | HARSH | 116             | N/A  | -5  | ATM             | ATM  | ATM  | 100          | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 5.5E3                     | N/A   | HIGHER OF M OR J |
| WORST-CASE        | N/A       | CBL *    | HARSH | 145             | 130  | -5  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 2.2E7          | 342      | 66         | 100       | 6.5E7                     | 1.4E8 | C AND D          |
| WORST-CASE        | N/A       | SEAL *   | HARSH | 145             | N/A  | -5  | 60              | ATM  | -1.1 | 100          | N/A  | 20  | 2.2E7          | 303      | 66         | 100       | 3.3E7                     | 1.4E8 | A AND C          |
| WORST-CASE        | N/A       | TAPE *   | HARSH | 104             | 80   | 50  | ATM             | ATM  | ATM  | 100          | N/A  | 20  | 4.5E5          | N/A      | N/A        | N/A       | 4.4E7                     | N/A   | K                |

\* RADIATION DOSES GIVEN ARE 40 YEAR BACKGROUND TIDS.

② RADIATION DOSES GIVEN ARE 1 YEAR POST-ACCIDENT TIDS. FOR DOSES LESS THAN ONE YEAR, SEE TABLE 8A-1.

NOTE: SPECIFIED TID FOR ENVIRONMENTAL QUALIFICATION SHALL BE 1.1 X ACCIDENT PEAK (GAMMA PLUS BETA) PLUS 40 YEAR BACKGROUND TIDS.

\* THESE DEVICES ARE LOCATED IN MORE THAN ONE AREA OF THE PLANT. ENVIRONMENTAL CONDITIONS ARE MADE UP FROM A SET OF WORST-CASE PARAMETERS. DEFINITION FOR THESE DEVICES ARE AS FOLLOWS:

CBL1 = ANYWHERE INSIDE CONTAINMENT.

CBL2 = ANYWHERE IN MSSS.

CBL3 = ANYWHERE OUTSIDE CONTAINMENT EXCEPT FOR MSSS (INCLUDES CABLE RUNNING OUTSIDE OF PLANT BUILDINGS).

CBL4 = INSIDE BUILDINGS OTHER THAN MSSS/CONTAINMENT.

CBL5 = CHLORINE BUILDING, INTAKE STRUCTURE.

CBL6 = TURBINE BUILDING.

CBL = WORST-CASE ANYWHERE FOR CABLE.

SEAL = WORST-CASE ANYWHERE.

TAPE = WORST-CASE OF THE FOLLOWING ROOMS: 1) RHR, 2) SAFETY INJECTION, 3) CONTAINMENT SPRAY, 4) CENTRIFUGAL CHARGING PUMP.

Figure 5-2 provides an overview of the review procedure for qualifying new and replacement equipment.

#### 5.1.2.3 Nonconforming Equipment

In cases where an engineering review identifies that a piece of equipment important to safety is not environmentally qualified in accordance with the criteria of Items 1 through 4.b of Section 2.2, corrective action is initiated in accordance with the guidelines of Nuclear Division Procedure (NDP) 600-0, "Corrective Action Programs"<sup>(14)</sup>. If the problem is a minor documentation deficiency or affects equipment in only one train of a safety system, a Nonconformance Report (NCR) is processed in accordance with NDP 600-1, "Control of Nonconforming Materials, Parts, and Components"<sup>(16)</sup>. NDP 600-1 establishes the measures for the identification, documentation, and control of nonconforming materials, parts, and components and provides for the documentation and verification of the resulting corrective action. If the problem affects redundant trains of a safety system, an Event Report (ER) is processed in accordance with NDP 600-3, "Event Reports"<sup>(20)</sup>. NDP 600-3 is a higher level corrective action program used to document and correct significant environmental qualification problems. Both NDP 600-1 and NDP 600-3 are used to determine the operability of equipment with an environmental qualification problem, establish plans and schedule for correcting the problem, and document justification for continued operation. Equipment qualification problems are also evaluated for reportability, in accordance with the guidelines of Generic Letter 88-07, by using NDP 600-1 or NDP 600-3.

#### 5.2 REVIEW OF ELECTRICAL EQUIPMENT IN MILD ENVIRONMENTS

Environmental qualification of electric equipment located in a mild environment (defined in Sections 3.3 and 4.0) is not included within the scope of 10 CFR 50.49. In general, this means that electric equipment in mild environments are not required to be environmentally qualified by type testing.



Existing Plant equipment in mild environments is considered to be already qualified on the basis of operating experience and current Plant procedures. This is because equipment failures occurring in normal environments have proved to be generally random in nature and are identified and corrected in accordance with existing Plant maintenance, inspection and testing programs. Critical equipment (eg, in control room) is also protected against off-normal environments by redundant, emergency powered heating, ventilating and air conditioning systems.

(2)

For new Plant equipment, the requirements of 10 CFR 50, Appendices A and B are considered sufficient to ensure adequate performance of electric equipment important to safety located in a mild environment. Design or purchase specifications will contain a description of the functional requirements and the specific environmental conditions during normal and abnormal conditions. Existing Plant surveillance/maintenance programs and periodic testing will also ensure that such equipment will perform its specified safety function during its anticipated installed life.

### 5.3 REVIEW OF OTHER EQUIPMENT SUBJECT TO ENVIRONMENTAL QUALIFICATION

As discussed in Section 3.4, certain post-accident monitoring instrumentation located in a harsh environment and installed in accordance with NUREG-0737 requirements was not initially subject to environmental qualification review. This instrumentation includes the Post-Accident Sampling System, the noble gas effluent monitors, and the iodine and particulate sampling capability. The environmental qualification requirements applicable to these instruments is summarized in Table 3-4.

The following approach has been taken for reviewing the environmental qualification of the subject equipment:

- (1) Regulatory Guide 1.97 Category 3 design and qualification criteria is applied to the subject equipment.



(8)  $TID = 1.1X(4.4E7) + 4.5E5 \text{ rads} = \underline{4.9E7 \text{ rads}}$ .

(5)

(9) Calculated TID less than rated TID, therefore the equipment meets qualification standards.

TABLE 8A-1  
CALCULATED  
TROJAN TOTAL INTEGRATED DOSES (E)  
Y AND B (RADS)

| <u>ACCIDENT DOSE<br/>LEVELS - INSIDE CONTAINMENT:</u>  |                                                                                                                  | <u>FIRST<br/>HR(A)</u>                    | <u>FIRST<br/>DAY(A)</u> | <u>FIRST<br/>WEEK(A)</u> | <u>FIRST<br/>MONTH(A)</u> | <u>FIRST<br/>YR(A)</u> |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------------------------|---------------------------|------------------------|
| (A)                                                    | LOCA, Y DOSE, BELOW EL 93 FT                                                                                     | 1.4E6                                     | 7.1E6                   | 2.0E7                    | 2.7E7                     | 3.3E7                  |
| (B)                                                    | LOCA, Y DOSE, ABOVE EL 93 FT                                                                                     | 1.7E6                                     | 5.5E6                   | 1.0E7                    | 1.3E7                     | 1.3E7                  |
| (C)                                                    | LOCA, B AIR DOSE,<br>(INFINITE CLOUD)(B)                                                                         | 8.1E6                                     | 4.6E7                   | 9.6E7                    | 1.4E8                     | 1.4E8                  |
| (D)                                                    | LOCA DOSE TO COMPONENTS IN<br>CONTACT WITH REACTOR COOLENT:<br>CONTACT B DOSE<br>CONTACT Y DOSE                  | 2.7E5<br>1.4E6                            | 2.7E6<br>7.1E6          | 1.0E7<br>2.0E7           | 1.3E7<br>2.7E7            | 2.1E7<br>3.3E7         |
| (D')                                                   | LOCA, Y DOSE TO SUBMERGED<br>COMPONENTS                                                                          | 1.0E6                                     | 1.0E7                   | 3.3E7                    | 4.6E7                     | 6.5E7                  |
| (E)                                                    | INTACT RCS, Y DOSE, BELOW<br>EL 93'                                                                              | 7.7E5                                     | 4.7E6                   | 1.2E7                    | 1.7E7                     | 2.3E7                  |
|                                                        | INTACT RCS, B AND Y DOSE<br>ABOVE EL 93'                                                                         | N/A                                       | N/A                     | N/A                      | N/A                       | N/A                    |
| (F)                                                    | INTACT RCS DOSE TO COMPONENTS<br>IN CONTACT WITH REACTOR COOLENT:<br>CONTACT B DOSE<br>CONTACT Y DOSE            | 3.4E6<br>4.7E6                            | 2.4E7<br>2.9E7          | 7.5E7<br>7.6E7           | 9.9E7<br>1.0E8            | 1.5E8<br>1.4E8         |
| <u>ACCIDENT DOSE<br/>LEVELS - OUTSIDE CONTAINMENT:</u> |                                                                                                                  |                                           |                         |                          |                           |                        |
| (G)                                                    | LOCA, Y DOSE, AREAS DIRECTLY<br>EXPOSED TO HIGH SOURCE<br>(CROSSHATCH)(C)                                        | 1.8E5                                     | 1.8E6                   | 6.2E6                    | 8.4E6                     | 1.1E7                  |
| (H)                                                    | LOCA DOSE TO COMPONENTS IN<br>CONTACT WITH REACTOR COOLENT:<br>CONTACT B DOSE<br>CONTACT Y DOSE                  | 2.7E5<br>1.4E6                            | 2.7E6<br>7.1E6          | 1.0E7<br>2.0E7           | 1.3E7<br>2.7E7            | 2.1E7<br>3.3E7         |
| (J)                                                    | LOCA, Y DOSE, ALL OTHER AREAS(D)                                                                                 | 7.6E1                                     | 7.7E2                   | 3.1E3                    | 4.1E3                     | 5.5E3                  |
| (K)                                                    | INTACT RCS, Y DOSE, AREAS<br>DIRECTLY EXPOSED TO HIGH SOURCE<br>(CROSSHATCH)(C)                                  | 1.5E6                                     | 9.0E6                   | 2.3E7                    | 3.2E7                     | 4.4E7                  |
| (L)                                                    | INTACT RCS DOSE TO COMPONENTS<br>IN CONTACT WITH REACTOR COOLENT:<br>CONTACT B DOSE<br>CONTACT Y DOSE            | 3.4E6<br>4.7E6                            | 2.4E7<br>2.9E7          | 7.5E7<br>7.6E7           | 9.9E7<br>1.0E8            | 1.5E8<br>1.4E8         |
| (M)                                                    | INTACT RCS, Y DOSE, ALL OTHER<br>AREAS(D)                                                                        | 1.8E2                                     | 1.1E3                   | 2.9E3                    | 3.9E3                     | 5.5E3                  |
| <u>BACKGROUND DOSE LEVELS:</u>                         |                                                                                                                  | <u>40 YR</u>                              |                         |                          |                           |                        |
| (N)                                                    | Y BACKGROUND, INSIDE<br>CONTAINMENT:<br>OUTSIDE BIOSHIELD<br>INSIDE BIOSHIELD                                    | 1.0E7<br>2.2E7                            |                         |                          |                           |                        |
| (O)                                                    | Y BACKGROUND, OUTSIDE<br>CONTAINMENT:<br>ZONE I<br>ZONE II<br>ZONE III<br>ZONE IV<br>ZONE V (AND II*, III*, IV*) | 5.0E2<br>1.1E3<br>6.6E3<br>4.4E4<br>4.5E5 |                         |                          |                           |                        |

- (A) EQUIPMENT REQUIRED TO OPERATE BETWEEN 0-1 HR SHOULD USE THE 1-HR TOTAL INTEGRATED DOSE (TID), 1 HR TO 1 DAY USE 1 DAY 1 DAY TO 1 WEEK USE 1 WEEK, ETC.
- (B) SEE FIGURES 8A-11 AND 8A-12 FOR FINITE CLOUD B CORRECTION FACTORS.
- (C) SEE FIGURES 8A-1 THROUGH 8A-10 FOR IDENTIFICATION OF CROSSHATCHED AREAS OUTSIDE CONTAINMENT.
- (D) INCLUDES THE FOLLOWING AREAS THAT ARE NOT CROSSHATCHED: AUXILIARY BUILDING, FUEL BUILDING, MAIN STEAM SUPPORT STRUCTURE, PIPING FACADE AREA, AND ELECTRICAL PENETRARIION AREA. FOR ALL REMAINING AREAS OUTSIDE CONTAINMENT, USE 4E2 RAD POST-ACCIDENT DOSE REGARDLESS OF POST-ACCIDENT EXPOSURE TIME.
- (E) DO NOT USE TABLE 8A-1 DOSES FOR LOCATIONS IN THE REACTOR VESSEL, REACTOR VESSEL ANNULUS AND UPPER REFUELING CAVITY. CONTACT THE NUCLEAR SAFETY AND REGULATION DEPARTMENT FOR DOSE EVALUATION. SEE TABLE 8A-2 FOR A LIST OF DOSE EVALUATIONS.

TABLE 8A-2

## REVIEW OF TOTAL INTEGRATED DOSE CALCULATIONS\*

| TNP No. | Approval Date | Component                                    | Location                                                                                                       | Dose Assigned                                                                                                                                                                                                                                                                                                                                     | Comments |
|---------|---------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 82-17   | 05/08/84      | Hydrogen Monitors<br>C-400 A&B               | C-400A, 93'el.<br>Aux. Bldg. C-400A Rm. 220<br>C-400B, 77'el. Aux. Bldg.<br>Rm. 270/208                        | A 9.37E5 Rads<br>B 3.72E4 Rads<br>40-yr. Background + 30 days<br>Post-Accident                                                                                                                                                                                                                                                                    |          |
| 82-26   | 08/17/82      | Resistance<br>Temperature<br>Detectors (RTD) | On the 31 in. I.D. Hot Leg<br>Reactor Coolant System (RCS)<br>Pipe and the 2 in. RTD Mani-<br>fold bypass line | Outside surface of 31 in. pipe<br>INTACT 3.63E7 R<br>LOCA 5.17E7 R<br>Inside surface of 31 in. pipe<br>INTACT 2.24E8 R<br>LOCA 1.19E8 R<br>Centerline of 31 in. pipe<br>INTACT 4.39E8 R<br>LOCA 2.32E8 R<br>Outside surface of 2 in. line<br>INTACT 3.12E7 R<br>LOCA 3.85E7 R<br>Inside surface of 2 in. line<br>INTACT 3.47E7 R<br>LOCA 4.62E7 R |          |

\* Calculations completed prior to issue date of PGE-1025 (July 1982) are not included.

TABLE BA-2

| TNP No. | Approval Date | Component                                                                  | Location                            | Dose Assigned                                                                                                            | Comments                |
|---------|---------------|----------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 83-37   | 05/08/84      | Component Cooling Water Surge Tank Level Switches and Valve Limit Switches | Piping Facade                       | LIS-3216 and LIS-3217 1.54E5 Rads<br>CV-10014 and CV-10015 limit switches 5.9E4 Rads                                     |                         |
| 84-21   | 05/14/84      | Residual Heat Removal (RHR) Pump Motor                                     | Aux. Bldg. 5'el.                    | 5.0E6 R                                                                                                                  |                         |
|         |               | Containment Spray (CS) Pump Motor                                          | Aux. Bldg. 5'el.                    | 9.3E5 R                                                                                                                  |                         |
|         |               | Safety Injection (SI) Pump Motor                                           | Aux. Bldg. 5'el.                    | 1.7E6 R                                                                                                                  |                         |
|         |               | Centrifugal Charging Pump (CCP) Motor                                      | Aux. Bldg. 25'el.                   | 1.4E6 R                                                                                                                  |                         |
| 84-22   | 05/02/84      | Containment Penetrations AZ & BZ-1,3,&5                                    | 45'el. Electrical Penetrations Area | 1-yr. Post-LOCA + 40-yr. bkgd.<br>Maximum 1.0E8 R                                                                        |                         |
| 84-24   | 05/15/84      | Various Components                                                         | Containment Submerged in Sump       | 1 Hour 1.06E6 R<br>1 Day 1.06E7 R<br>1 Week 3.3E7 R<br>4 Weeks 4.7E7 R<br>1-Yr. 6.6E7 R<br>LOCA doses without background | Superseded by TNP-84-43 |

TABLE 8A-2

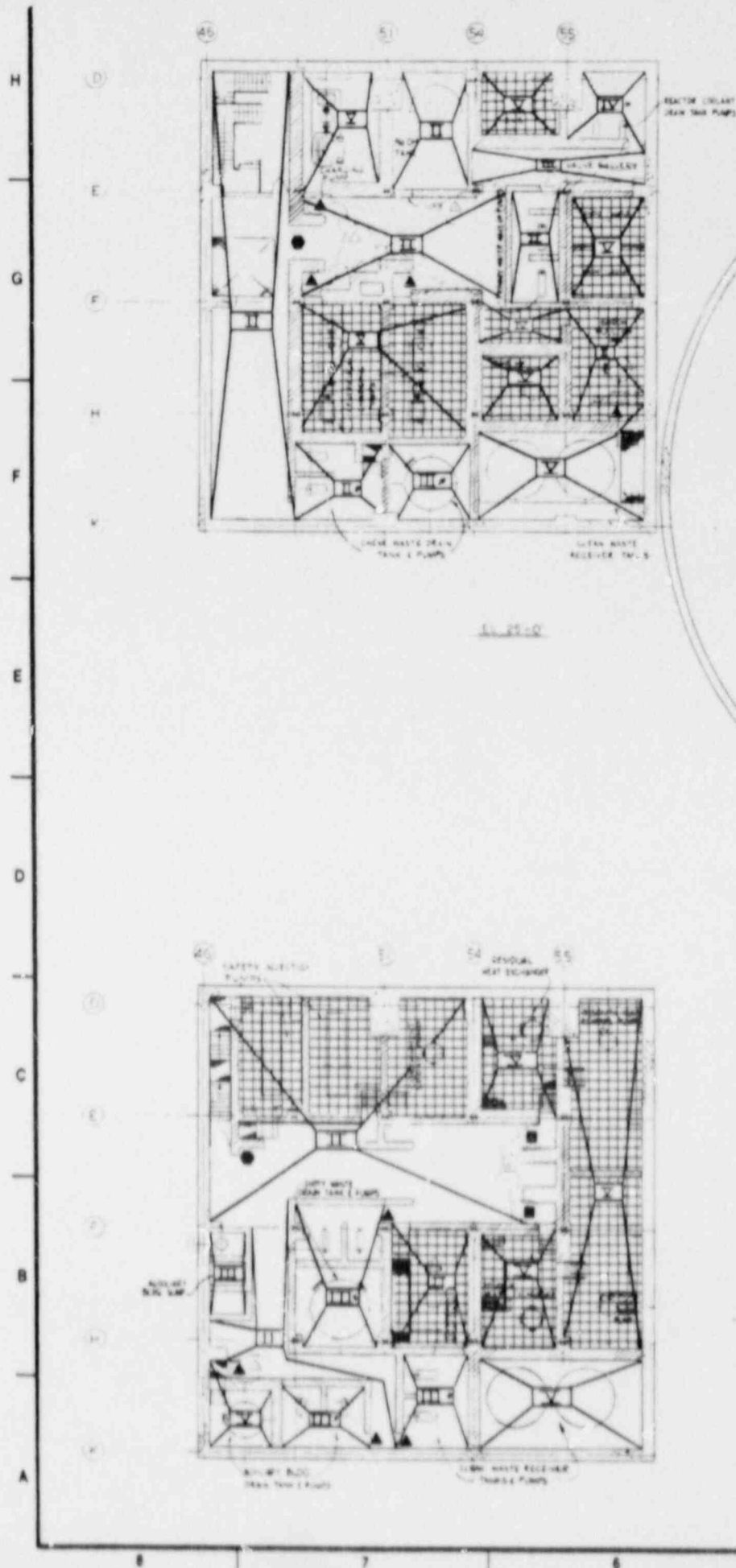
| TNP No. | Approval Date | Component                   | Location                            | Dose Assigned                                                                               |                                                           | Comments                                                                                 |
|---------|---------------|-----------------------------|-------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------|
| 84-28   | 05/11/84      | Terminal Block ATB-466      | Pipe Facade 66'el.                  | 1-yr. + 40-yr. bkgd.<br>INTACT 8.9E5 Rads<br>LOCA 1.1E7 Rads                                |                                                           | Lifetime qualified dose of terminal block ATB-466 is 3.8E7 Rads.                         |
| 84-31   | 08/20/85      | Various                     | Various                             |                                                                                             |                                                           | Bases for TID Values used in PGE-1025.                                                   |
| 84-43   | 08/09/84      | Various                     | Submerged in Containment Sump       | Point A<br>1 Hour 1.1E6 Rads<br>1 Day 1.1E7<br>1 Week 3.4E7<br>4 Weeks 4.9E7<br>1-Yr. 6.9E7 | Point B<br>1.0E6 Rads<br>1.0E7<br>3.3E7<br>4.6E7<br>6.4E7 | Time for Barton Transmitters to reach a total integrated dose of 5.3E7 Rads is 12 weeks. |
| 86-16   | 04/08/85      | Various Detectors           | Next to the Reactor Pressure Vessel | 2.26E11 Rads<br>1-yr. post-accident +<br>40-yr. bkgd.                                       |                                                           | Neutron TID of TNP 86-16 is 2.1E11 Rads.                                                 |
| 86-32   | 07/24/86      | MO 8923 A&B,<br>8807 A&B    | 5'el. Aux. Bldg.                    | 6E6 Rads<br>1-yr. Post-LOCA + 40-yr. bkgd.                                                  |                                                           |                                                                                          |
| 86-33   | 07/24/86      | MO 8809 A&B                 | 45'el. Pipe Facade                  | 8.7E6 Rads<br>1-yr. Post-LOCA + 40-yr. bkgd.                                                |                                                           |                                                                                          |
| 86-34   | 07/24/86      | MO 8804A, 8816A<br>and 8924 | 5'el. Aux. Bldg.                    | 8E6 Rads<br>1-yr. Post-LOCA + 40-yr. bkgd.                                                  |                                                           |                                                                                          |

TABLE 8A-2

| TNP<br>No. | Approval<br>Date | Component                     | Location           | Dose Assigned                              | Comments                              |
|------------|------------------|-------------------------------|--------------------|--------------------------------------------|---------------------------------------|
| 86-35      | 07/24/86         | MO 8804 B,<br>8716 B          | 5'el. Aux. Bldg.   | 7E6 Rads<br>1-yr. Post-LOCA + 40-yr. bkgd. |                                       |
| 87-18      | 06/22/87         | Pressure<br>Transmitter 2087A | 61'el. Pipe Facade | LOCA 2.7E6 Rads<br>INTACT 2.3E6 Rads       | 1-yr. Post-accident +<br>40-yr. bkgd. |

2663P

NOTE: Figure 8A-1 is taken from M-408, Rev. 2







# SI APERTURE CARD

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Aperture Card

FOR AREAS INSIDE CONTAINMENT  
SEE TEXT

| ZONING LEGEND |                               |                                                                       |
|---------------|-------------------------------|-----------------------------------------------------------------------|
| SYMBOL        | DESIGN DOSE RATE<br>(mrem/hr) | DESCRIPTION<br>OF OCCUPANCY                                           |
| I             | $\leq 10$                     | CONTROLLED ACCESS<br>LIMITED OCCUPANCY<br>40 HRS/WEEK                 |
| II            | $\leq 25$                     | CONTROLLED ACCESS<br>LIMITED OCCUPANCY<br>8-40 HRS/WEEK               |
| III           | $\leq 15$                     | CONTROLLED ACCESS<br>LIMITED OCCUPANCY<br>1-8 HRS/WEEK                |
| IV            | $\leq 100$                    | CONTROLLED ACCESS<br>LIMITED OCCUPANCY<br>SHORT PERIODS               |
| V             | $> 100$                       | NORMALLY INACCESSIBLE<br>CONTROLLED<br>OCCUPANCY FOR SHORT<br>PERIODS |

## GENERAL NOTES

1. SHOWS EXTENT OF RADIATION ZONE
2. ZONES MARKED BY \* MAY CHANGE UP TO  
ZONE V DEPENDING ON TECHNOLOGY  
AND/OR OPERATION OF EQUIPMENT
3. PLANT IS OPERATING AT FULL POWER

4. INDICATES AREA OF  
HIGH GAMMA RADIATION SOURCES  
LOCATION OF THESE SOURCES  
WILL BE INDICATED BY ACTUAL  
RADIATION LEVELS PRESENT

5. INDICATES AREA  
OF HIGH GAMMA RADIATION SOURCES

6. INDICATES AREA OF  
HIGH GAMMA RADIATION SOURCES  
LOCATION OF THESE SOURCES  
WILL BE INDICATED BY ACTUAL  
RADIATION LEVELS PRESENT



AREAS EXPOSED TO HIGH  
GAMMA RADIATION SOURCES

8809060003 70/

Amendment 5  
(August 1988)

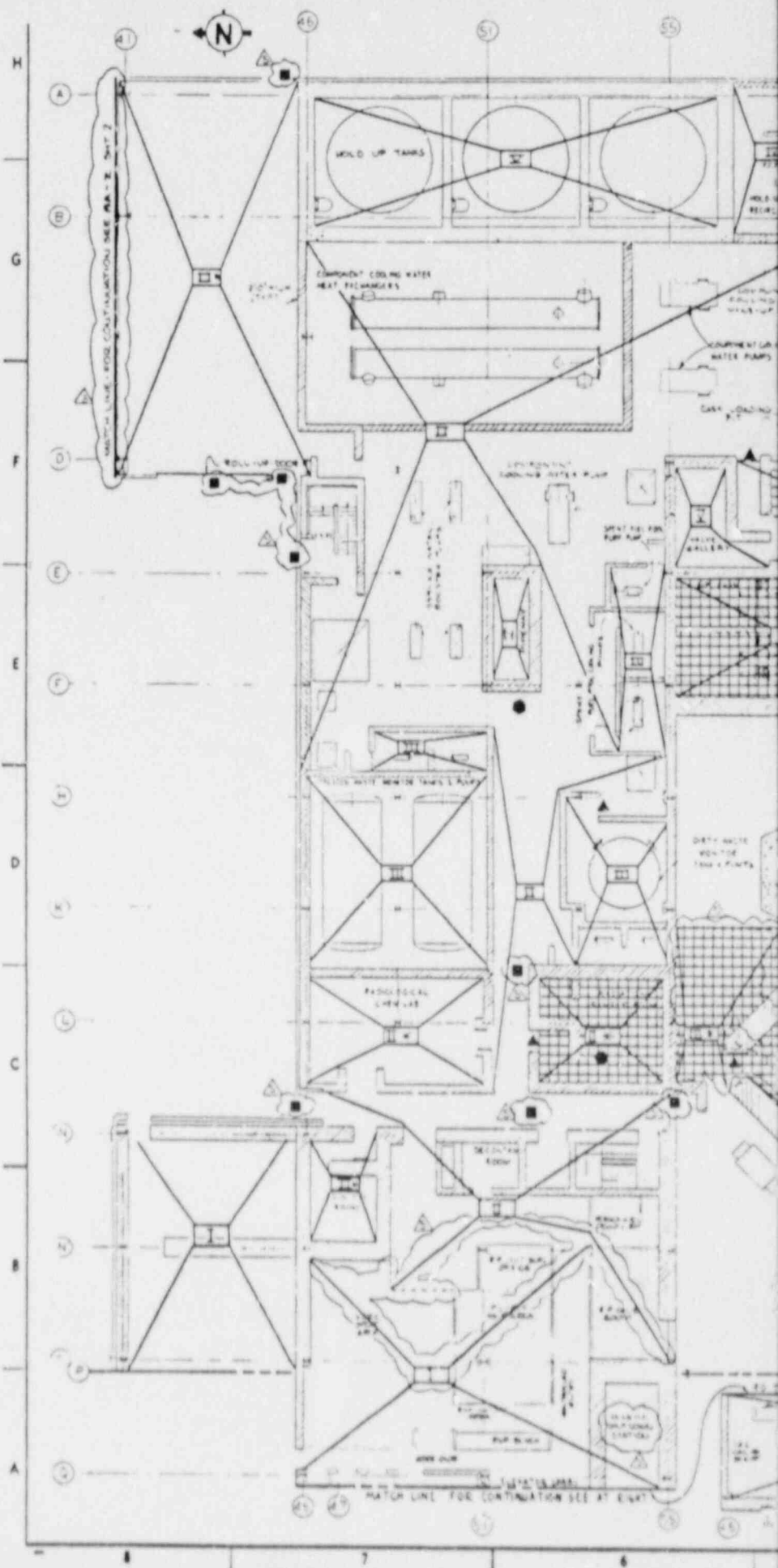
TROJAN NUCLEAR PLANT  
FSAR

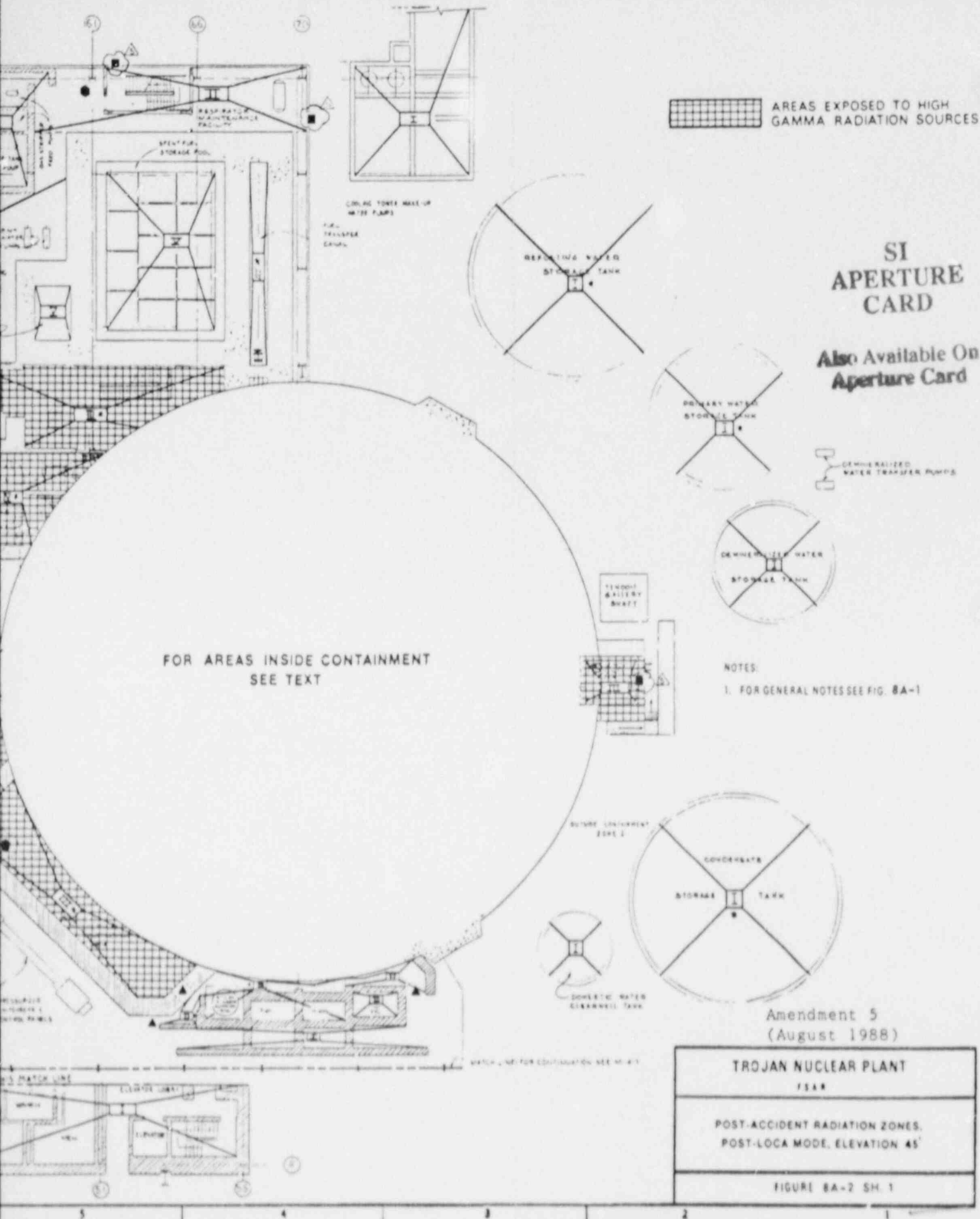
POST-ACCIDENT RADIATION ZONES,  
POST-LOCA MODE, ELEVATION 5' AND 25'

FIGURE BA-1

NOTE:

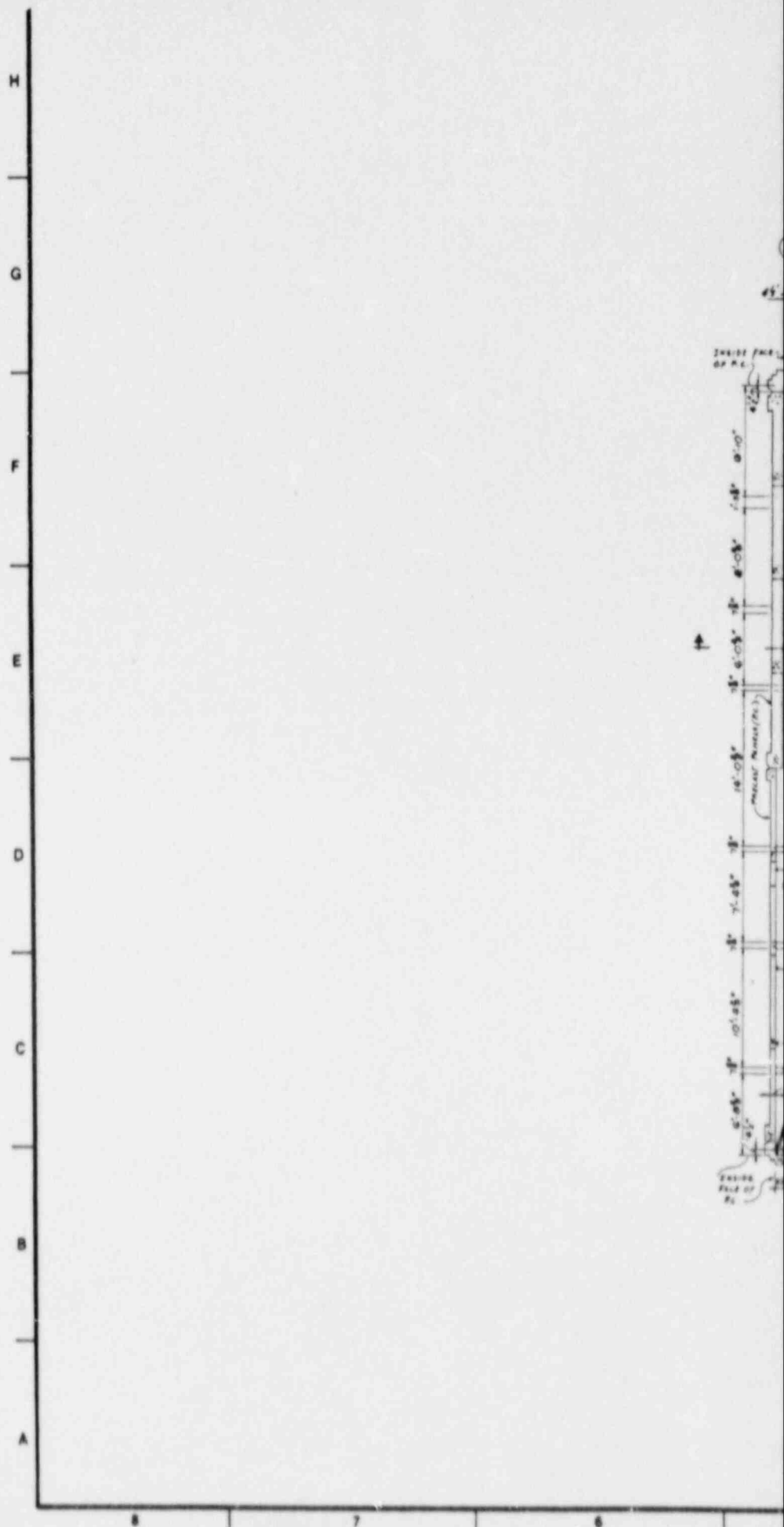
Figure 8A-2, Sheet 1, is taken  
from M-409, Sheet 1, Rev. 2





8809060003-02

Figure 8A-2, Sheet 2 is taken from M-409, Sheet 2, Rev. 0



**Also Available On  
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NOTES

1. FOR GENERAL NOTES SEE FIG. 8A-1

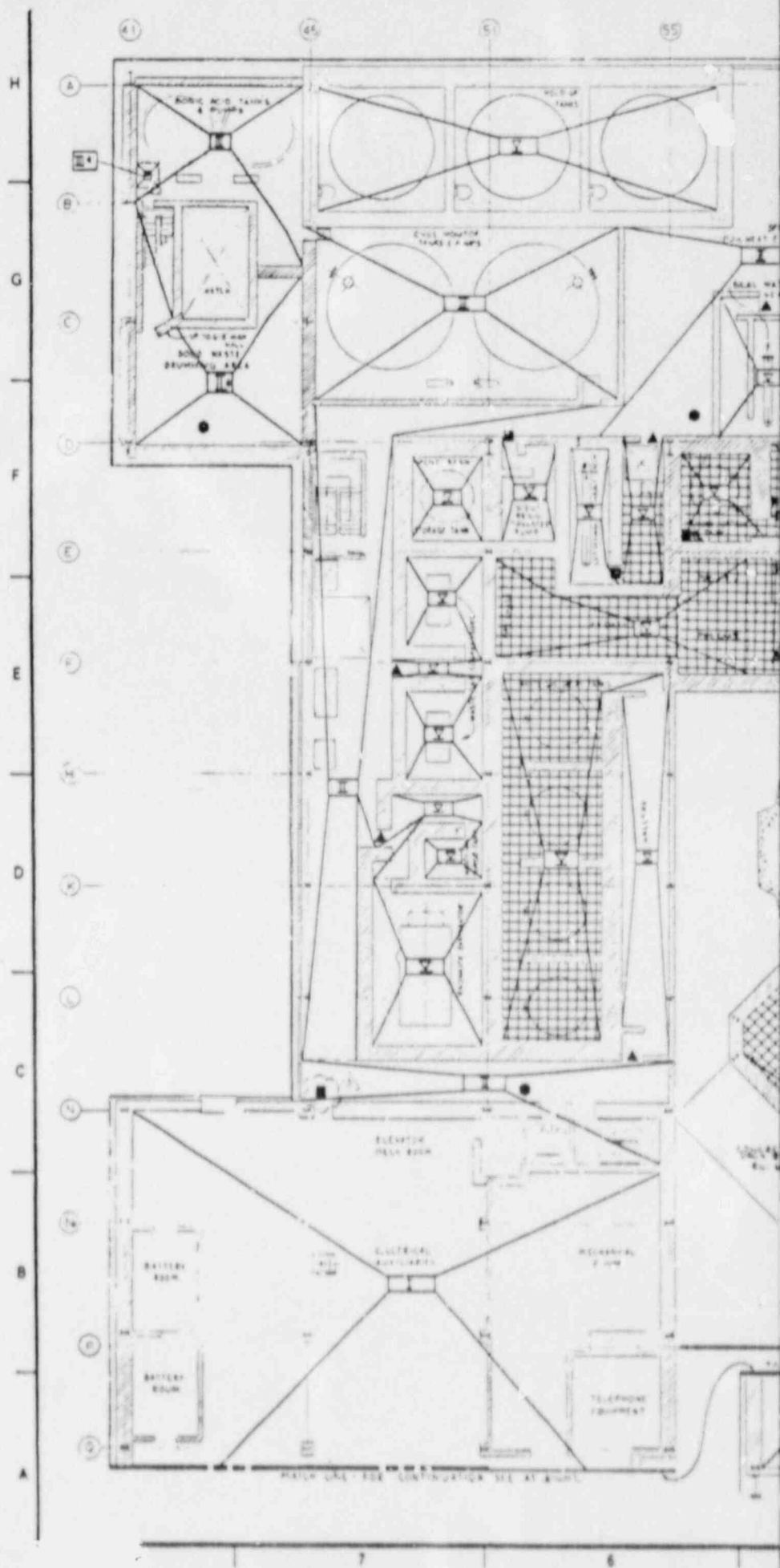
TROJAN NUCLEAR PLANT  
FEAR

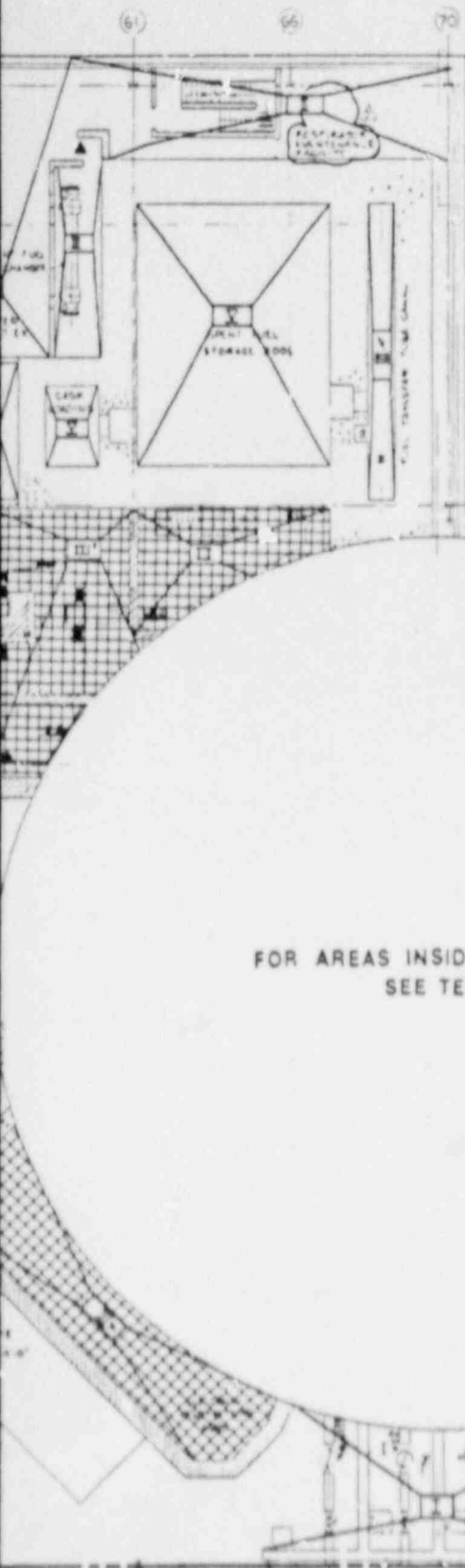
POST-ACCIDENT RADIATION ZONES,  
POST-LOCA MODE, ELEVATION 45'

FIGURE 8A-2 SH. 2

8809060003-03

NOTE: Figure 8A-3 is taken from M-410, Rev. 3





# SI APERTURE CARD

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AREAS EXPOSED TO HIGH  
GAMMA RADIATION SOURCES

FOR AREAS INSIDE CONTAINMENT  
SEE TEXT

POST-ACCIDENT  
RADIATION ZONES  
ELEVATION 61

OUTSIDE CONTAINMENT  
ZONE 1

NOTES:  
1. FOR GENERAL NOTES SEE FIG. 8A-1

Amendment 5  
(August 1988)

TROJAN NUCLEAR PLANT  
FTR

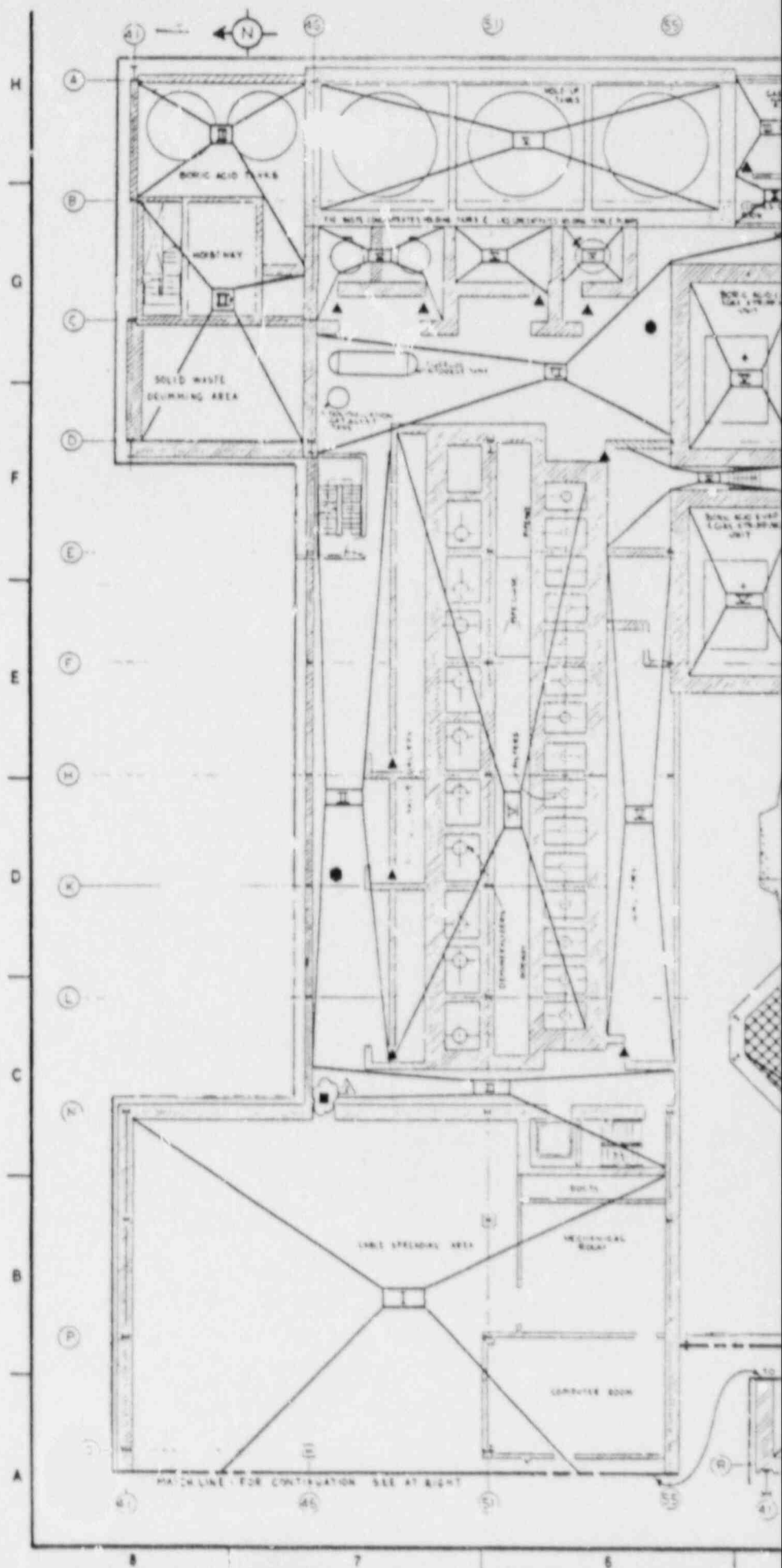
POST-ACCIDENT RADIATION ZONES,  
POST-LOCA MODE, ELEVATION 61

FIGURE 8A-3

8809060003-04

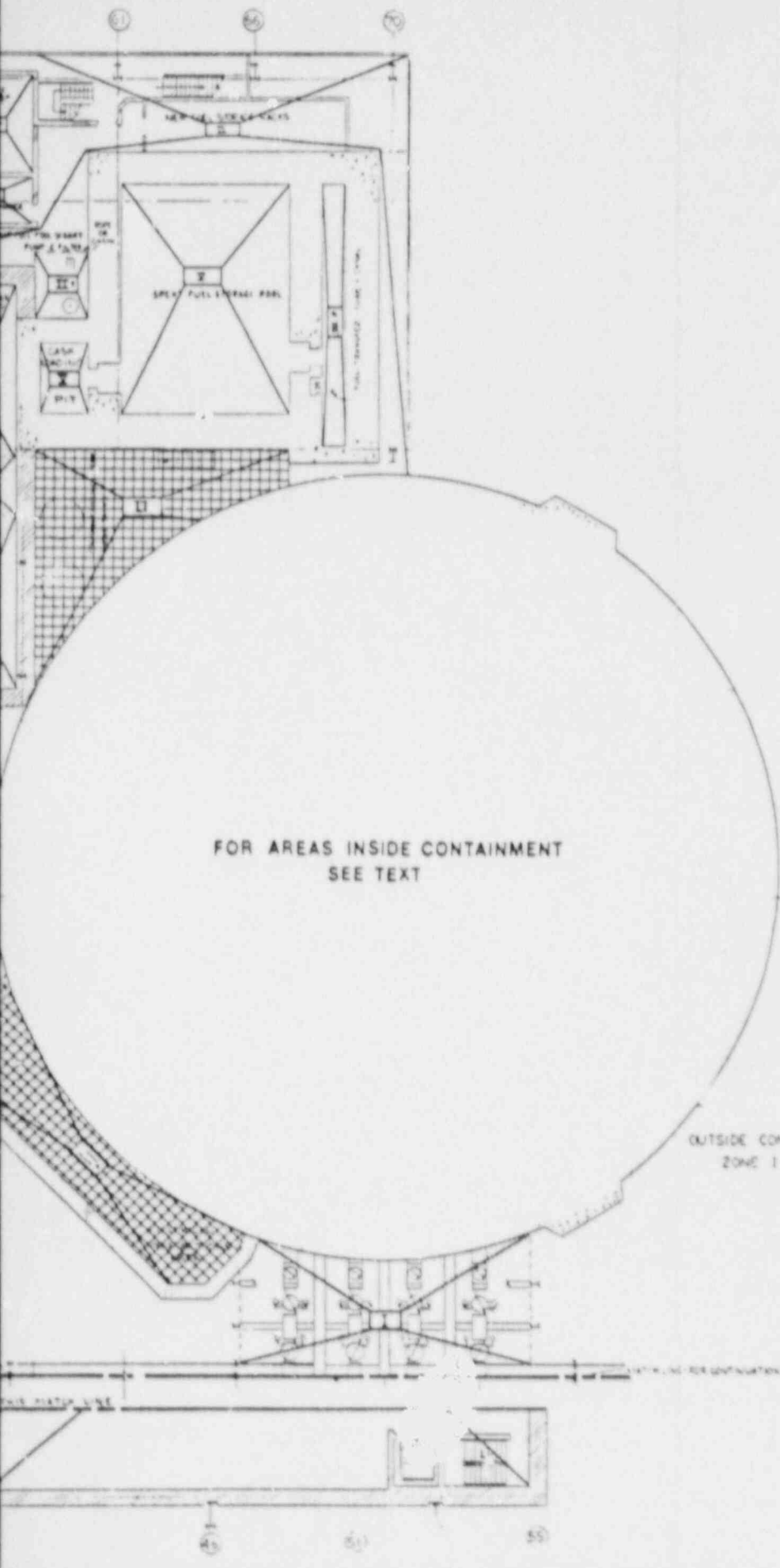


NOTE: Figure 8A-4 is taken  
from M-411, Rev. 2



# SI APERTURE CARD

Also Available On  
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AREAS EXPOSED TO HIGH  
GAMMA RADIATION SOURCES

FOR AREAS INSIDE CONTAINMENT  
SEE TEXT

OUTSIDE CONTAINMENT  
ZONE 1

## NOTES

1. FOR GENERAL NOTES SEE FIG. 8A-1

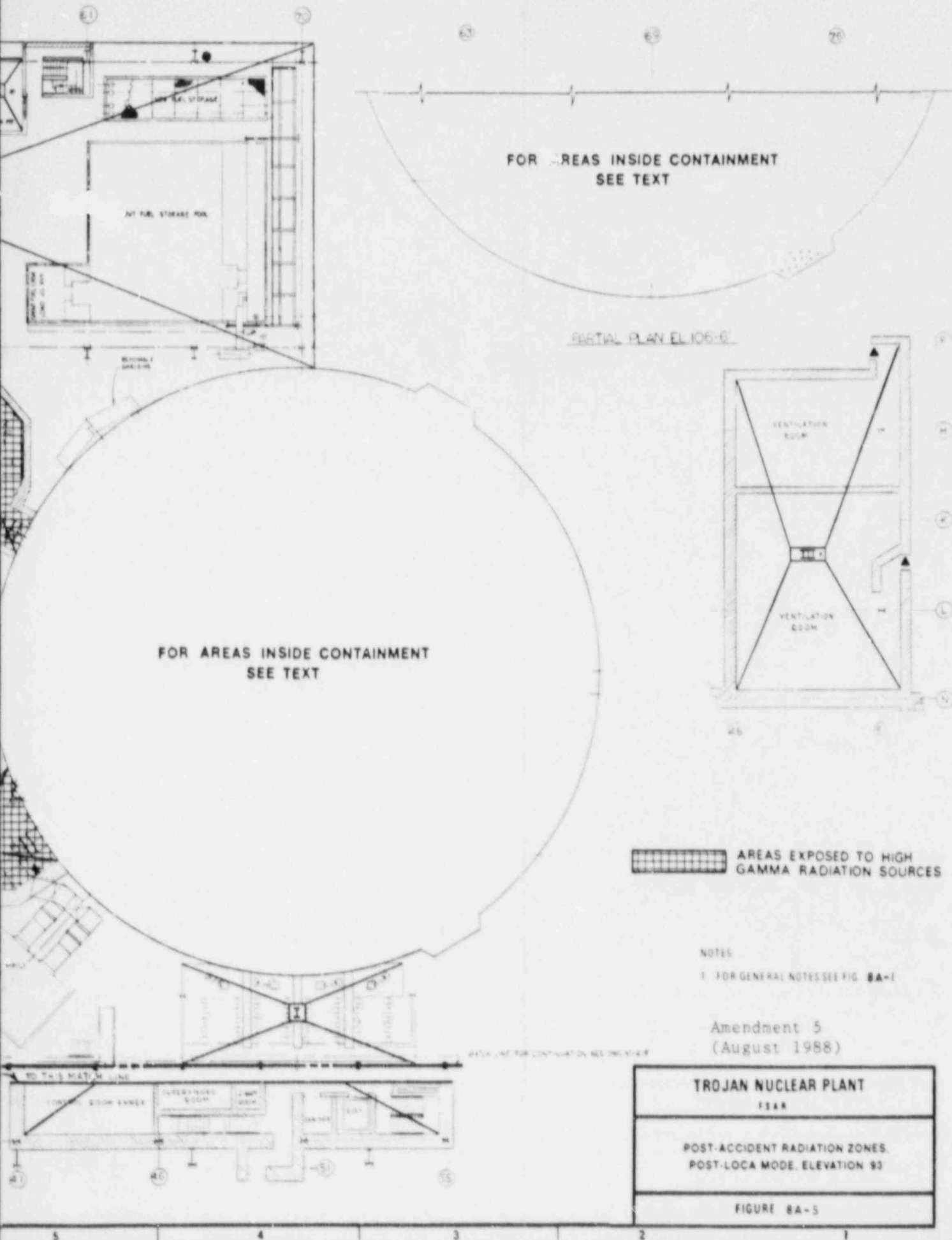
Amendment 5  
(August 1988)

|                                                                            |
|----------------------------------------------------------------------------|
| <p> TROJAN NUCLEAR PLANT<br/> TSAR </p>                                    |
| <p> POST-ACCIDENT RADIATION ZONES,<br/> POST-LOCA MODE, ELEVATION 77' </p> |
| <p>FIGURE 8A-4</p>                                                         |

8809060003-05

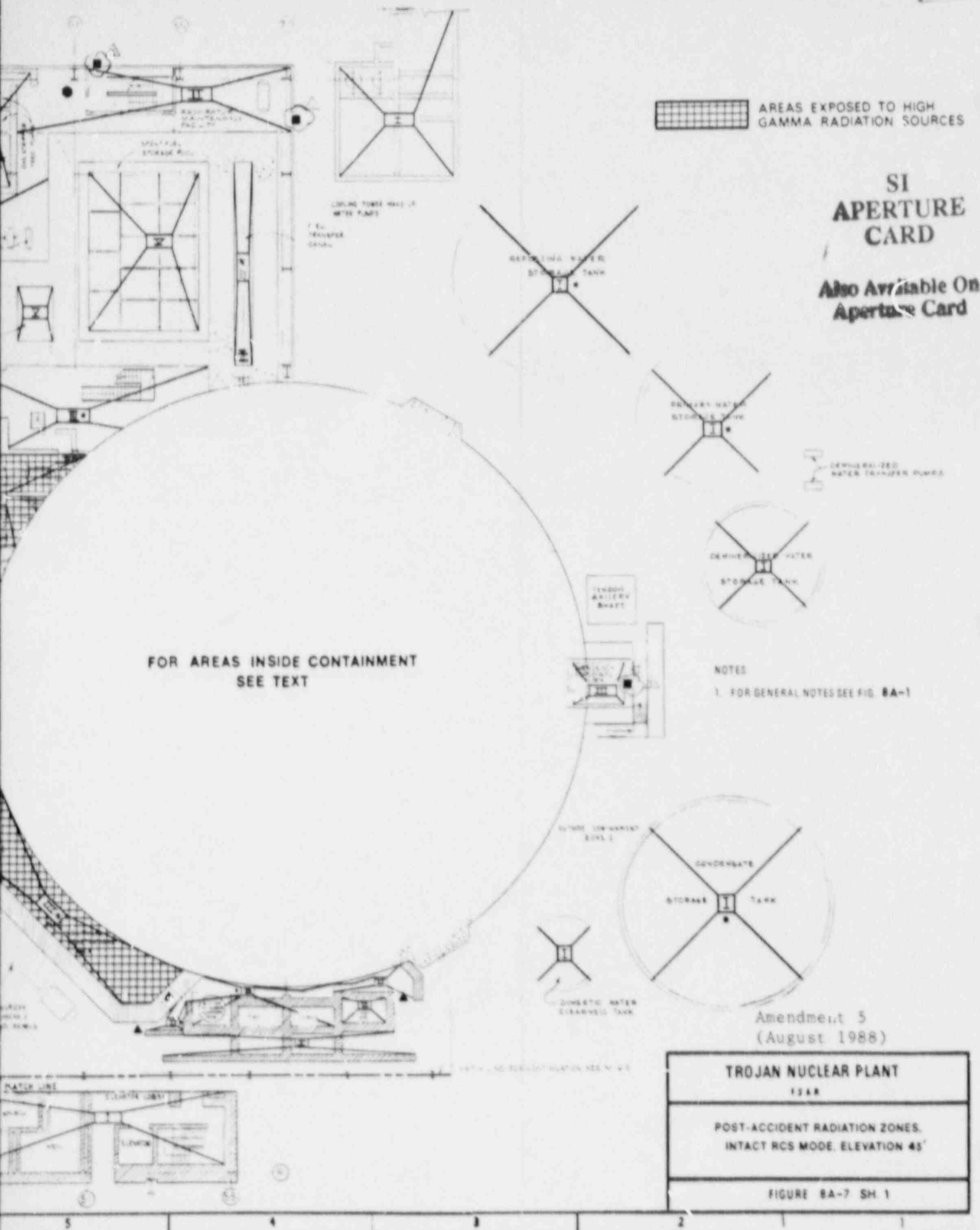
**Also Available On  
Aperture Card**

Architectural floor plan of the Bldg. 1000, showing various rooms and structural elements. The plan includes a grid system with letters A through H on the left and numbers 41 through 55 at the top. Key rooms labeled include: PLANT ROOM, WASTE STORAGE, CONTROLLED ACCESS MACHINE SHOP, MAINTENANCE SHOP, VENTILATION FILTER ROOM, BOTTLE ROOM, CONTROL ROOM, WATER SAMPLE LABORATORY, and PERSONNEL ROOM. The plan also shows structural columns, walls, and a north arrow. A note at the bottom right indicates "FOR CONTINUATION SEE P. 1001".



880906 0003 706





8809060003-07

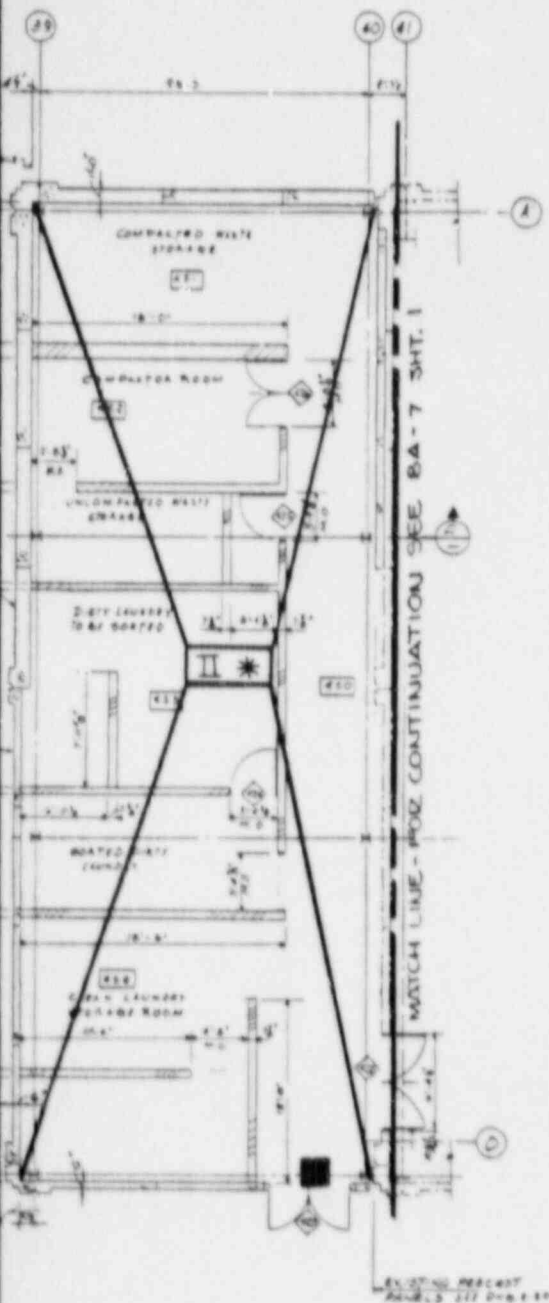
Figure 8A-7, Sheet 2 is taken from M-409, Sheet 2, Rev. 0

2000-01  
First of  
the year



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AREAS EXPOSED TO HIGH  
GAMMA RADIATION SOURCES

## NOTES

1. FOR GENERAL NOTES SEE FIG. 8A-1

Amendment 5  
(August 1988)

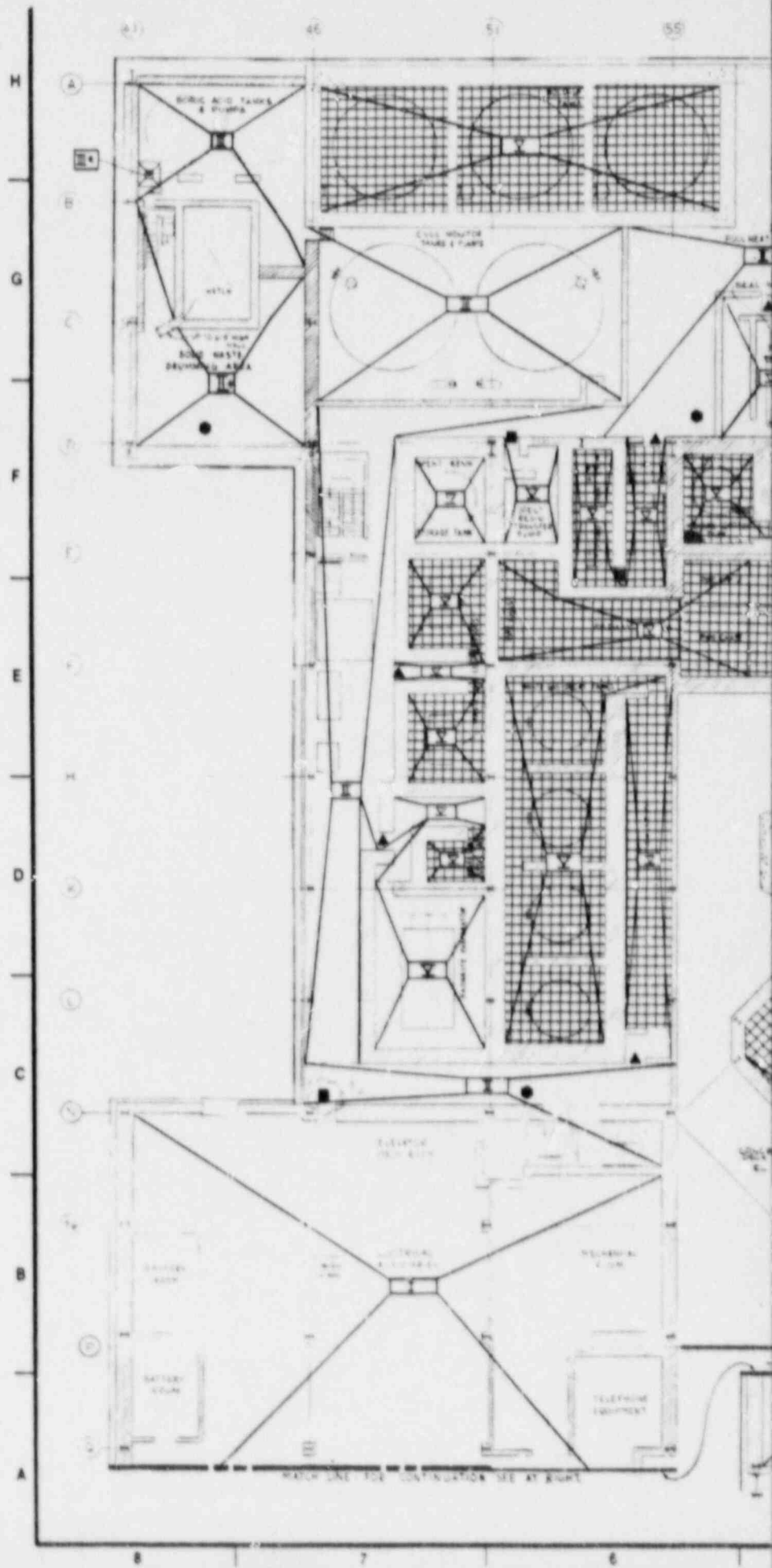
TROJAN NUCLEAR PLANT  
FSAR

POST-ACCIDENT RADIATION ZONES,  
INTACT RCS MODE, ELEVATION 45'

FIGURE 8A-7 SH. 2

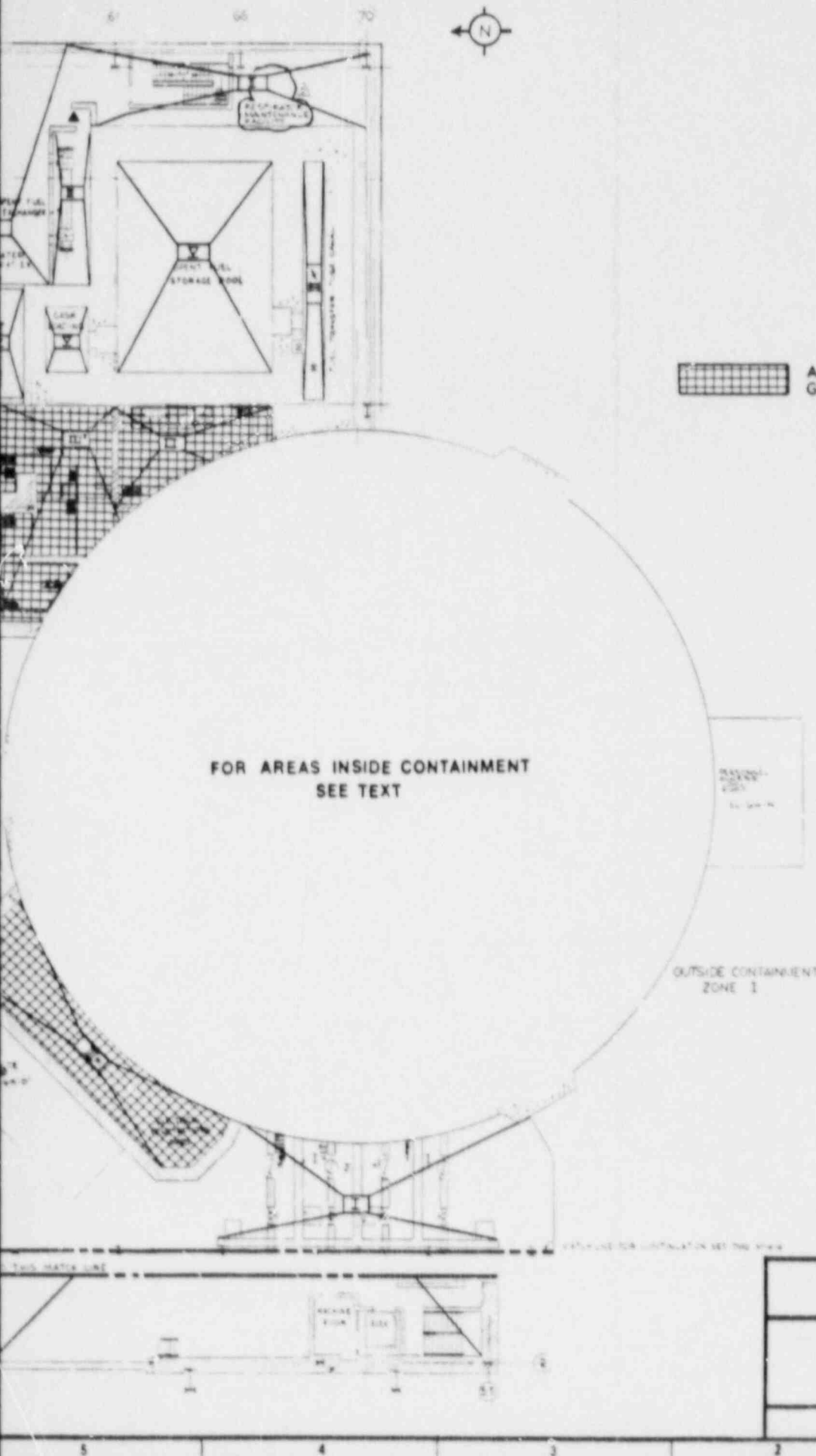
9809060003-08

NOTE: Figure 8A-8 is taken from M-410, Rev. 3



# SI APERTURE CARD

Also Available On  
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AREAS EXPOSED TO HIGH  
GAMMA RADIATION SOURCES

FOR AREAS INSIDE CONTAINMENT  
SEE TEXT

OUTSIDE CONTAINMENT  
ZONE 1

NOTES:  
1. FOR GENERAL NOTES SEE FIG. 8A-1

Amendment 5  
(August 1988)

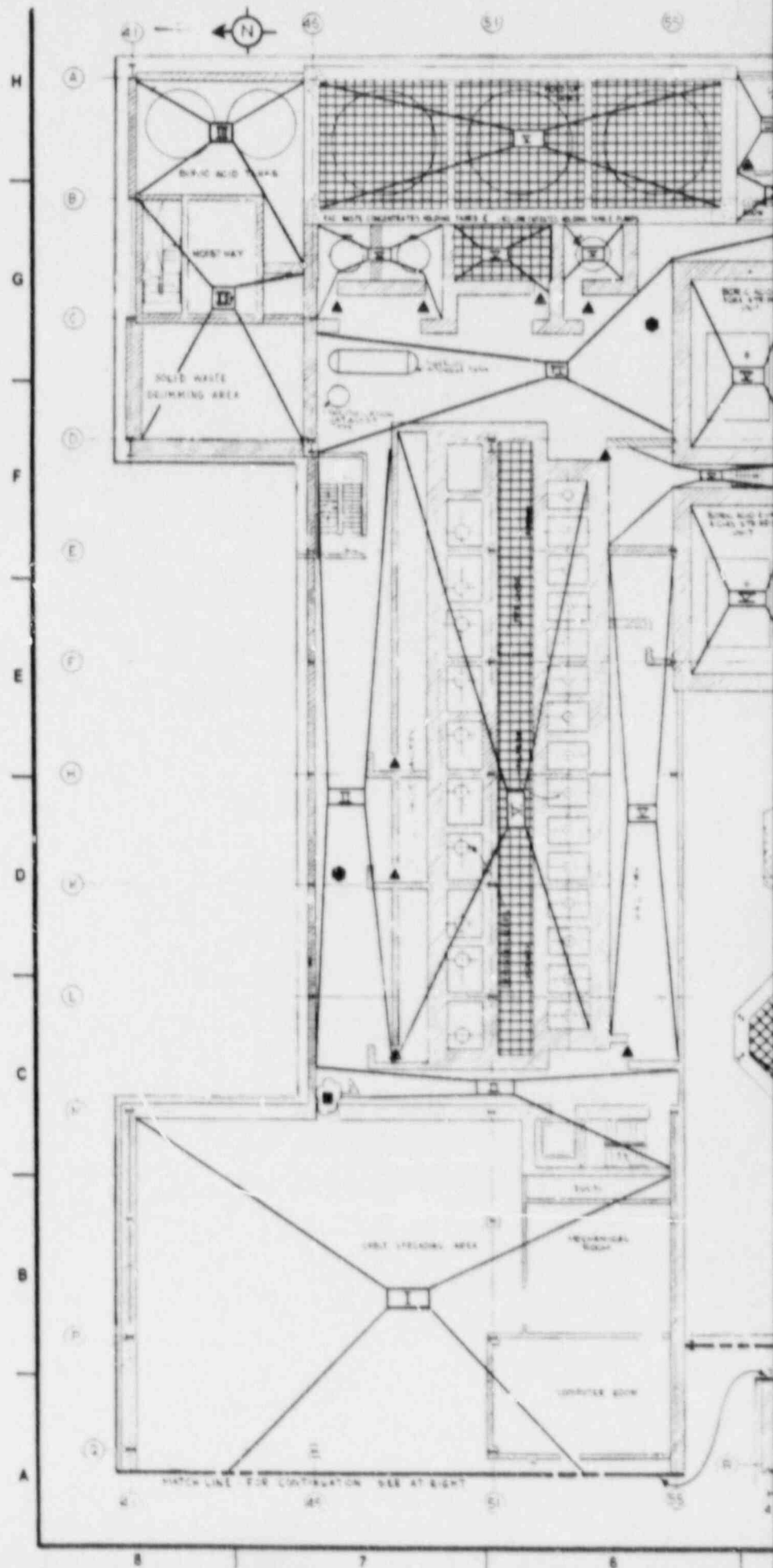
TROJAN NUCLEAR PLANT  
FSAR

POST-ACCIDENT RADIATION ZONES.  
INTACT RCS B-ODE. ELEVATION 61'

FIGURE 8A-8

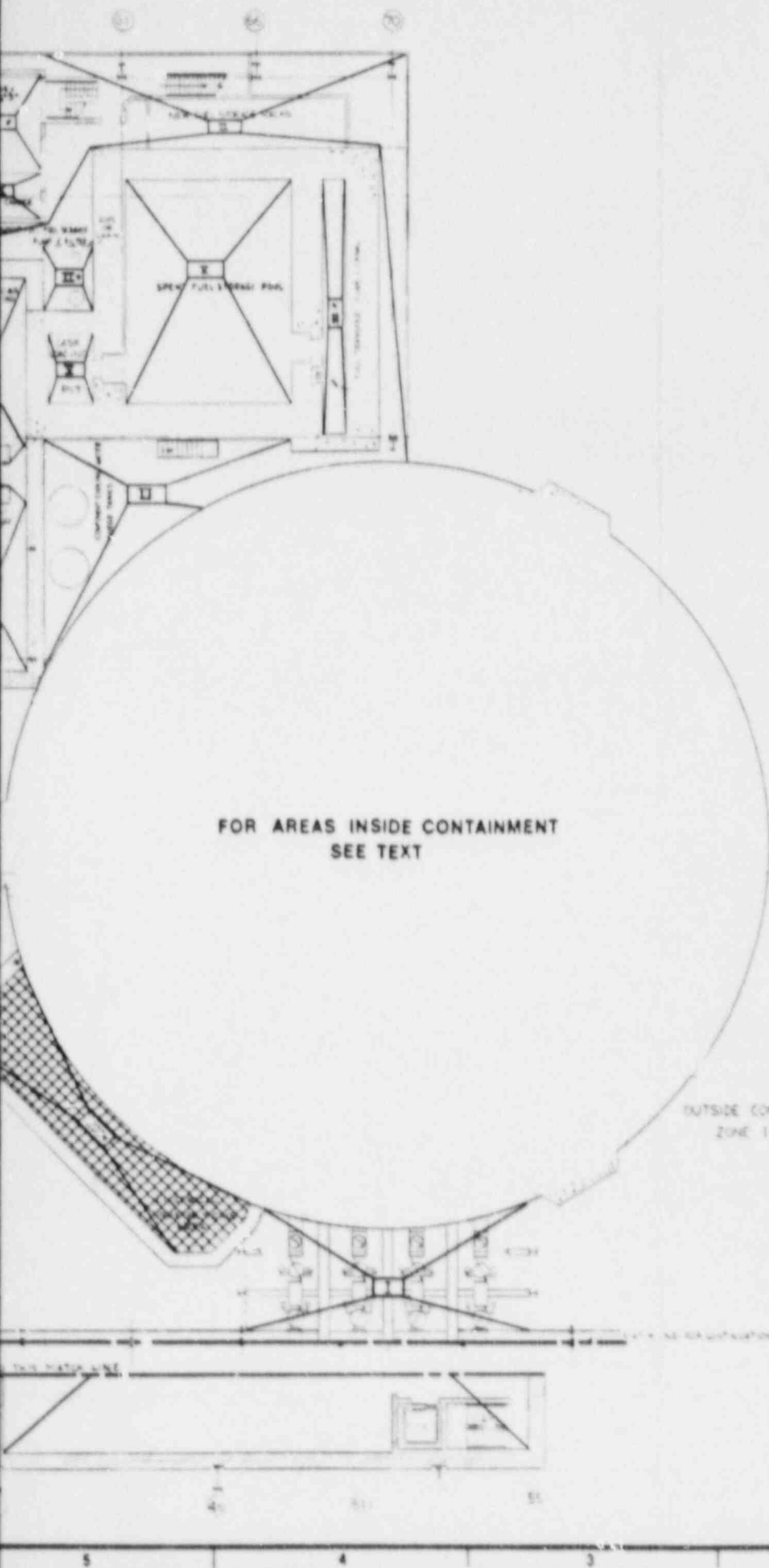
8809060003-09

NOTE: Figure 8A-9 is taken  
from M-411, Rev. 2



# SI APERTURE CARD

Also Available On  
Aperture Card



AREAS EXPOSED TO HIGH  
GAMMA RADIATION SOURCES

FOR AREAS INSIDE CONTAINMENT  
SEE TEXT

OUTSIDE CONTAINMENT  
ZONE 1

NOTES

1. FOR GENERAL NOTES SEE FIG. 8A-1

Amendment 5  
(August 1988)

TROJAN NUCLEAR PLANT  
ISAR

POST-ACCIDENT RADIATION ZONES,  
INTACT RCS MODE, ELEVATION 77'

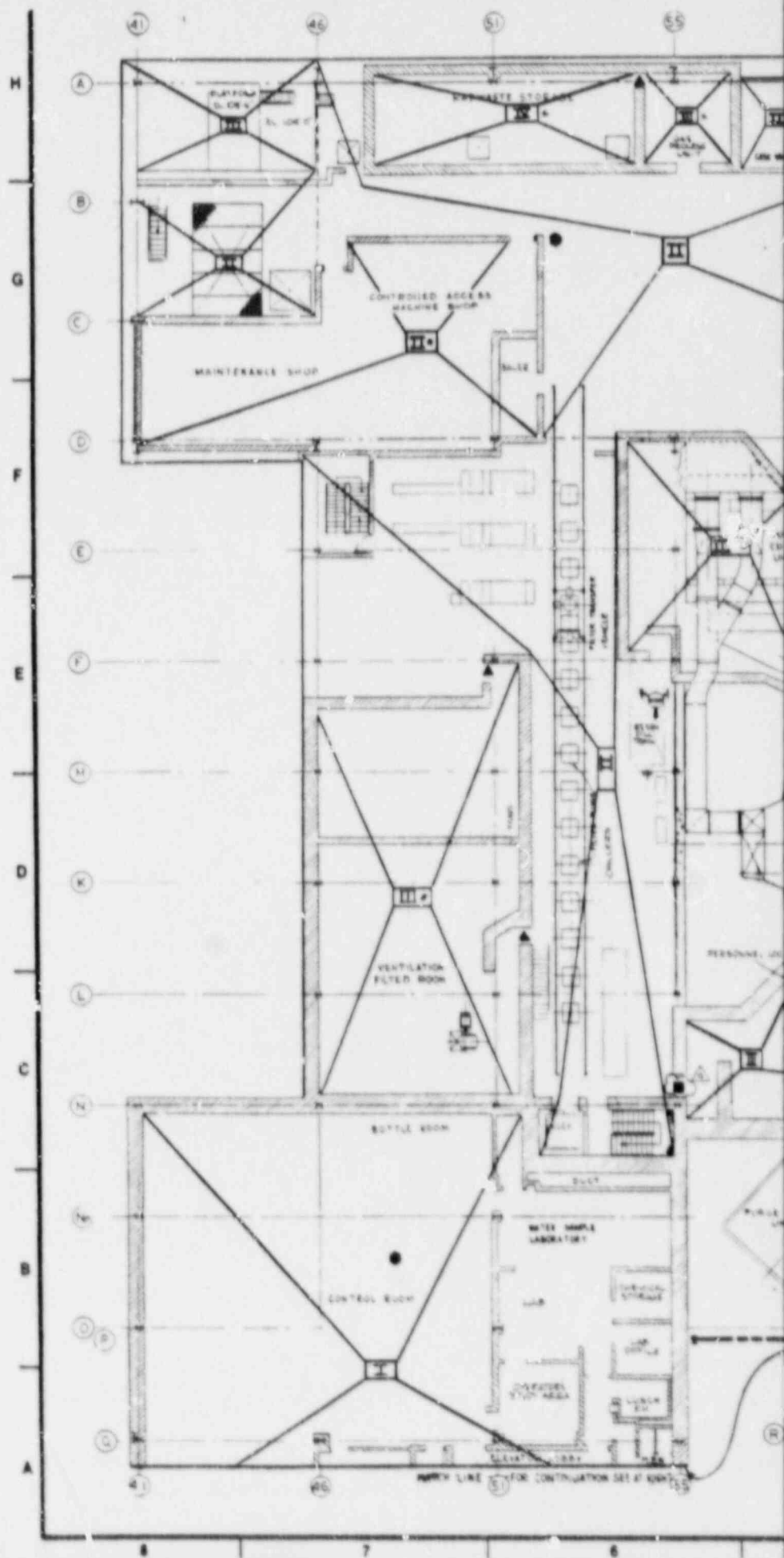
FIGURE 8A-9

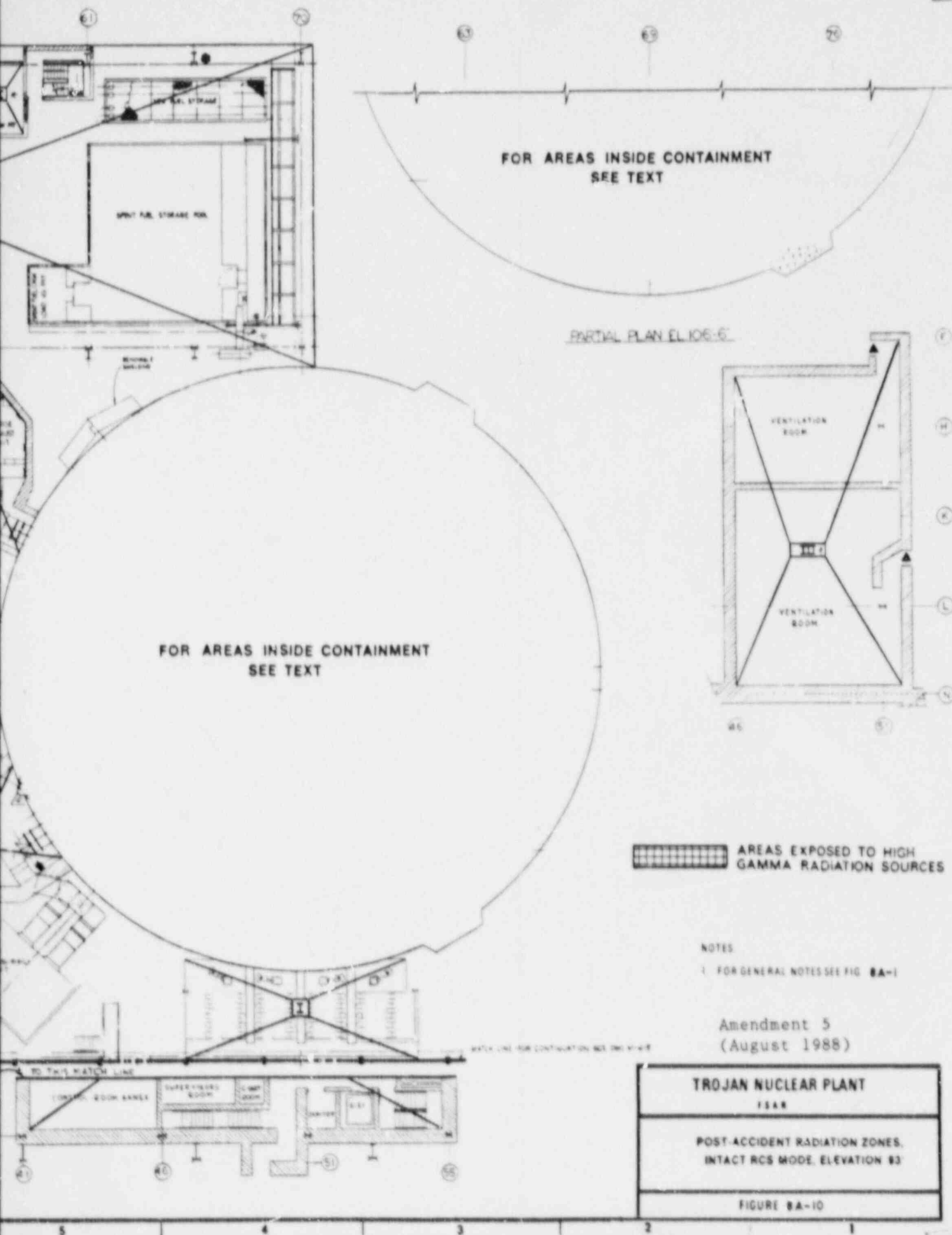
880906 0003-10

# SI APERTURE CARD

Also Available On  
Aperture Card

NOTE: Figure 8A-10 is taken  
from M-412, Rev. 4







APPENDIX 8.C

THERMAL-HYDRAULIC ANALYSIS  
OF HIGH-ENERGY LINE BREAKS  
IN THE TURBINE BUILDING

(4) (5)(4)

Amendment 5  
(August 1988)

## 1.0 INTRODUCTION AND BACKGROUND

This appendix describes the thermal-hydraulic analysis of high-energy line breaks (HELBs) in the Trojan Turbine Building.

The analysis predicts the accident environments in the Turbine Building, resulting from a HELB, for the purpose of environmental qualification of equipment important to safety. The HELBs evaluated for equipment qualification in the Turbine Building are full and partial area main steam line breaks (MSLB) and a full area main feedwater line break (MFLB).

This analysis was performed in response to a Westinghouse notification, Westinghouse letter POR-84-573, dated June 6, 1984, and NRC Information Notice 84-90, Main Steam Line Break Effect on Environmental Qualification of Equipment, that identified a potential deficiency in the analyses of HELBs outside Containment for Westinghouse plants.

During review of the Westinghouse methodology for calculating mass and energy releases for postulated MSLB accidents, the NRC noted that Westinghouse did not account for steam generator tube bundle uncover and the associated superheating of the steam. The original Trojan HELB analyses completed in 1975, and the resulting effects on equipment, were based on a saturated steam environment.

The Westinghouse Owners Group (WOG) formed a subgroup to address the superheated blowdown issue. The subgroup contracted with Westinghouse to perform superheated blowdown analyses and provide implementation guidelines so that new Plant-specific HELB evaluations could be performed.

In October 1985, Westinghouse issued WCAP-10961, Revision 1, "Steamline Break Mass/Energy Releases for Equipment Environmental Qualification Outside Containment". WCAP-10961 provides MSLB mass

(4)  
(5)  
and energy release data, including applied assumptions, to be used for Plant-specific analyses. It was subsequently determined that this blowdown data did not accurately portray the first second of the full area break transient. PGE contracted with Bechtel to provide additional mass and energy releases for the early portion of the full area MSLB transient<sup>(8)</sup>.

(4)  
A multicompartment model of the Turbine Building was developed using the thermal-hydraulic code RELAP4/MOD6. Transients utilizing accident assumptions and the blowdown data from Westinghouse and Bechtel were run for both MSLBs and MFLBs. Although MFLB blowdown was not part of the NRC issue, the analysis was performed to update the original analysis and maintain a consistency in the methods of analysis for HELBs.

The proceeding sections describe the method of analysis, key assumptions, results, and conclusions of the HELB evaluation of the Trojan Turbine Building.

## 2.0 METHOD OF ANALYSIS AND KEY ASSUMPTIONS

A high-energy line blowdown into an enclosed or partially enclosed space is a complex phenomenon involving fluid flow, heat transfer, and thermodynamic principles. In order to accurately model the resulting environments, a thermal-hydraulic computer code must be utilized. The RELAP4/MOD6 computer code<sup>(4)</sup> was chosen to predict the environmental conditions of the Turbine Building during and following a high-energy line break (HELB) transient.

Several distinct steps were required for this analysis. These were:

- (1) Review of the Turbine Building, high-energy pipe locations, and safety-related equipment locations. This task required that the Turbine Building be thoroughly investigated. Compartment sizes and vent paths were calculated. Pipe break locations were identified for both the main steam line and main feedwater line.
- (2) Construction of the RELAP4/MOD6 model of the Turbine Building. Based upon the review performed in Paragraph 1 above, a thermal-hydraulic model of the Turbine Building was developed. This task included calculation of loss coefficients for fluid flow paths, flow areas. Choking criteria were chosen in accordance with the NRC Standard Review Plan<sup>(9)</sup>.
- (3) RELAP4/MOD6 blowdown input for both the main steam line breaks (MSLB) and the main feedwater line break (MFLB). Conservative mass and energy release rates for each of the subject HELBs were provided by Westinghouse and Bechtel<sup>(5,8)</sup>.
- (4) Execution of the computer simulation for each HELB. A computer simulation was performed for both the MSLBs and

(5)

the MFLB. Time step size was chosen to provide short-term and long-term pressure and temperature histories. Service conditions for each Turbine Building compartment were obtained.

A detailed discussion of this analysis is provided below.

## (4)

### 2.1 DESCRIPTION OF THE TURBINE BUILDING RELAP4/MOD6 MODEL

The Turbine Building contains portions of the four main steam and main feedwater lines that run from each steam generator in the Containment to the main turbine and main feedwater pumps, respectively. The Turbine Building consists of three elevations (floors) that begin at grade elevation (45 feet) and extend to a ceiling elevation of 157 feet, 2 inches. The floor elevations are 45 feet, 63 feet, 69 feet and 93 feet.

(5)

The Turbine Building can be characterized as large open areas and rooms containing safety-related and other equipment. Hatchways, ventilation ducts, open areas, the railroad bay and physical barriers with associated failure pressures provide vent paths for steam following an HELB.

(4)

The main steam and main feedwater lines were evaluated to identify possible break locations. These locations are documented in Reference 3. For the main steam line, the critical break location is the first elbow after entering the Turbine Building from the Main Steam Support Structure (MSSS). For the main feedwater line, the break is assumed to occur at the discharge to the main feedwater pump. Figures 8C-1 and 8C-2 show the isometric views of the main steam line and main feedwater lines and their respective break locations.

The rooms and open areas of the Turbine Building are represented as volumes in the RELAP4/MOD6 code. These volumes are normally defined by physical barriers such as walls or floors but may also be defined by a commonly shared imaginary boundary. Thermal-hydraulic exchange

between volumes is via junctions which represent physical passages, failed barriers or open spaces.

The primary RELAP4/MOD6 model of the Turbine Building consists of 24 volumes and 54 junctions which connect these volumes to one another. Additional volumes and junctions were added for the partial area MSLB analyses in order to provide a better model of the Turbine Building response. These additional volumes and junctions are associated with the Emergency Diesel Generator rooms and are located internal to Volumes 17 and 18 of the primary model (13) (14).

Figures 8C-3 through 8C-5 illustrate the location of the primary volumes on each elevation in the Turbine Building. As indicated by these figures, most of the volumes have well defined boundaries, such as walls or floors. In some cases, however, an arbitrary boundary line was chosen either between two Turbine Building regions. These arbitrary boundaries were chosen to separate regions that have different flow characteristics. Note that only 23 of the primary volumes represent Turbine Building regions. The other volume (Volume 13) represents the outside atmosphere, and in terms of RELAP4/MOD6 provides the boundary conditions to the problem (ie, the atmosphere is assumed to have a constant thermodynamic state).

The RELAP4/MOD6 code also requires information that characterizes flow within a compartment and describes the junctions between compartments. These parameters are straightforward in piping systems, but for the Turbine Building, where the flow path is diverse and the volumes of irregular shape and size, this presents a challenge in modeling. Since the steam from an HELB has significant inertial forces acting on it and is quite buoyant, equal credit was given for horizontal and vertical flow in calculating compartmental flow areas. Junction data were calculated utilizing a modified inertia equation and "best-estimate" exchange areas. Also, the use of loss coefficients was limited between compartments with unobstructed junctions. This proves to be a conservative assumption since energy is not being extracted from the system in these instances<sup>(7)</sup>.

(4)

The model was constructed to maximize mass and energy dispersion into adjacent compartments, thus exposing as many safety components as possible to accident conditions.

## (5) (4) (5)

### 2.2 MASS AND ENERGY BLOWDOWN DATA

The RELAP4/MOD6 model of the Turbine Building can simulate a HELB only if the mass and energy discharge rates for the break of interest are known. When these are developed, they are input into the RELAP4/MOD6 model as a "fill table", which provides mass and energy release rates as a function of time. By specifying the location of the "fill junction" and providing a start signal, denoted by a "trip", the HELB into the Turbine Building can be simulated accurately.

Tables 8C-1 to 8C-6 provide the blowdown data utilized in the Turbine Building HELB analysis. This blowdown data was supplied to PGE by Bechtel Corporation<sup>(8)</sup> and Westinghouse<sup>(5)</sup>.

#### 2.2.1 MAIN FEEDWATER LINE BREAK BLOWDOWN DATA

Table 8C-1 depicts the blowdown data developed for the MFLB for use in the RELAP4/MOD6 model of the Turbine Building. To maximize blowdown, and consequently the impact on the Turbine Building, the following were postulated for the Trojan simulation:

- (4)
- (1) Initial condition of the Plant was 100 percent power with the steam generator operating at 112<sup>5</sup> pounds per square inch absolute (psia).
  - (2) The break is located at the main feedwater pump discharge as in Figure 8C-2. The break location is represented by Volume 5 in the model.
  - (3) Mass available for blowdown is maximized.

As mentioned above, the blowdown curve developed for the MFLB is extremely conservative. Some of the primary reasons for this are:

- (1) A break time of 0.005 seconds to attain a double-ended guillotine break is assumed. This is unrealistic and results in a rapid rise in discharge rate, which in turn adversely impacts the initial pressure rise in the break compartment.
- (2) No credit is taken for gradual decompression of the affected secondary side piping, which would tend to reduce mass discharge rates.
- (3) Mass available for blowdown has been conservatively maximized. This extends the blowdown duration and adversely affects the Turbine Building environment.

The simulation was run for 100.0 seconds. This provided an opportunity to obtain "recovery" characteristics of the Turbine Building following blowdown.

#### 2.2.2 FULL AREA MAIN STEAM LINE BREAK BLOWDOWN DATA

Tables 8C-2 and 8C-3 list the blowdown data for two cases of a full area MSLB in the Turbine Building. The data in the Table 8C-2 replaced the data in Table 8C-3 for the initial blowdown in order to determine worst-case pressure effects for a full area MSLB. Table 8C-3 was used to predict the worst-case temperature conditions as a result of a full area MSLB.

Initial Plant conditions for the full area MSLB are 0 percent power (hot standby condition) for maximum pressure effects, and 102 percent power for maximum temperature and humidity effects. At 0 percent power, the steam generator pressure is at a maximum ( 1125 psig) which in turn results in the greatest mass discharge rates. At 102



(5)  
(4)  
percent power, steam generator inventory is at a minimum, this reduces the time to tube bundle uncover and, thus, results in maximizing the superheated steam available for blowdown. Using the mass and energy release rates provided in Tables 8C-2 and 8C-3, a "fill table" was constructed for the RELAP4/MOD6 simulation. The computer simulation was executed for 700.0 seconds for the 100 percent power case and 100 seconds for the 0 power case to allow some recovery of the Turbine Building environment to ambient conditions.

### 2.2.3 PARTIAL AREA MAIN STEAM LINE BREAK BLOWDOWN DATA

Tables 8C-4 through 8C-6 list the blowdown data for three cases of a partial area MSLB. The data in these tables represents blowdown from three different sizes of pipe breaks. The worst-case results from each of these separate cases were combined to produce a bounding worst-case temperature profile.

(5)  
Worst-case pressure effects are associated with the full area breaks and therefore were not reevaluated as part of the small break analyses.

The initial plant condition for the partial area MSLBs is 102 percent power for maximum temperature and humidity effects. At 102 percent power, steam generator inventory is at a minimum. This reduces the time to tube bundle uncover and thus results in maximizing the superheated steam available for blowdown. Using the mass and energy release rates provided in Tables 8C-4, 8C-5, and 8C-6, "fill tables" were constructed for the RELAP4/MOD6 simulation. The computer simulation was executed for 800 seconds to allow for complete blowdown and partial recovery of the Turbine Building environment to ambient conditions.

### 3.0 RELAP4/MOD6 COMPUTER SIMULATION

Computer simulation of the MSLB and MFLB were executed using the RELAP4/MOD6 Turbine Building model described in previous sections. Initial conditions for each transient were:

- (1) Ambient temperature = 104°F, 95 percent humidity inside and 91°F, 50 percent humidity outside of the Turbine Building.
- (2) Ambient pressure = 14.7 psia, and
- (3) No flow in the Turbine Building.

At time,  $t = 0.001$  seconds, the blowdown transient was initiated using the appropriate mass and energy release data. The break volumes, Volume 5 for the MFLB and Volume 11 for the MSLB, are specified by the location of the "fill junction".

A HELB simulation can be separated into three periods:

- (1) Initial Blowdown Period. This period occurs at the initiation of blowdown. It is dramatic since the Turbine Building is exposed to a rapid, nearly instantaneous, transition situation of "no flow" to "high flow" relative to the size of the break. For the full area breaks, this transition also results in a pressure transient which may fail some physical barriers (doors, metal siding, etc).
- (2) Steady Blowdown Period. During this period a relatively steady blowdown flow exists. Inertial effects are minimized. The break volume temperature and pressure profiles stabilize. (Other compartments in thermal-hydraulic exchange with the break

compartment may still be trending toward a stable thermodynamic environment.)

- (3) Post-Blowdown Period. Termination of the mass and energy release from the break marks the beginning of the post-blowdown period. During this period the Turbine Building begins "recovery" to ambient conditions.

The computer simulations utilized time step control features and output display options which capture the key parameters in each of these transient periods. Those key parameters being pressure and temperature for the volumes and of interest.

#### 4.0 RESULTS OF HIGH-ENERGY LINE BREAK (HELB) ANALYSIS

Results for the HELBs are described below. The main feedwater line break (MFLB) and main steam line breaks (MSLB) are discussed in separate sections that describe the break volume response, and the response of neighboring volumes.

##### 4.1 RESULTS OF MFLB SIMULATION

The computer simulation and results of the MFLB in the Turbine Building are documented in Reference 7.

##### 4.1.1 VOLUME RESPONSE

Tables 8C-7 and 8C-8 show the pressure and temperature responses of Volume 5, the break volume, and other volumes of interest, to a simulated MFLB.

Both pressure and temperature rise rapidly in the break volume, reaching peak values of 15.2 pounds per square inch absolute (psia) and 212°F, respectively. The break volume pressure drops to 14.7 psia almost immediately. The temperature in the break compartment decreases slowly following termination of blowdown.

A peak temperature on the order of 170°F is reached by several volumes during blowdown. At termination of blowdown, the temperature coastdown for neighboring volumes vary. At 100 seconds into the transient, approximately 50 percent of the volumes are within 15°F of ambient. The temperatures of the remaining volumes are on the order of 160°F at 100 seconds and are slowly declining. The slower cooling rates of these volumes is due to limited vent paths to surrounding compartments at lower temperatures.

None of the volumes (excluding the break volume) exceeded a pressure of 15 psia during the transient. Several volumes experience a pressure on

(4) the order of 14.9 psia at various times during the transient. The pressures of all volumes return to ambient within 5 seconds.

#### (4) (5) 4.2 RESULTS OF THE FULL AREA MSLB SIMULATION

The computer simulation and results of the full area MSLB in the Turbine Building are documented in Reference 7. The results of the two full area MSLB simulations are combined in the following discussion to provide the bounding pressure and temperature conditions.

##### 4.2.1 VOLUME RESPONSE

(5) (4) (5) Tables 8C-9 and 8C-10 show the pressure and temperature response of Volume 11, the break volume, and other volumes of interest to a simulated full area MSLB.

(4) As in the MFLB case, both temperature and pressure in the break volume rise rapidly. The temperature response of the break volume peaks to 327°F at 90 seconds from the start of blowdown. The pressure response is a short-lived spike ( 0.04 seconds) to 16.4 psia. The pressure returns to ambient within 0.5 seconds from the start of blowdown. Temperature in the break volume decreases more slowly than the MFLB simulation, reaching the saturation temperature of 212°F, 670 seconds into the transient.

(3) The response of neighboring volumes to the MSLB is similar in nature to that exhibited for the MFLB. Several of the volumes reach temperatures close to that of the break volume.

(4) (5) (4) Due to the extreme temperatures resulting from the superheated blowdown and limited vent paths to cooler surroundings, the temperatures of many of the volumes decrease very slowly. Only those volumes representing enclosed rooms are at or near ambient conditions 700 seconds from the start of blowdown (ie, end of the simulation).

(4) Pressures in neighboring volumes are less than 1.0 psia above ambient during the transient.

### 4.3 RESULTS OF THE PARTIAL AREA MSLB SIMULATION

The computer simulation and results of the partial area MSLB in the Turbine Building are documented in Reference 14. The following section provides a summary of the results.

#### 4.3.1 VOLUME RESPONSE

Table 8C-11 shows the worst-case temperature of Volume 11, the Break Volume, and other volumes of interest to a simulated partial area MSLB. The table represents the worst-case temperatures compiled from the three small break cases analyzed as discussed in Section 2.2.3.

Compared to the full area HELBs, both temperature and pressure in the break volume rise much more gradually due to the slower release of energy from the break. The temperature response of the break volume peaks to 469°F at 395 seconds from the start of blowdown for the worst-case break size (ie, 1.2 sq ft). Temperature in the break volume decreases more slowly than the full area HELB simulation due to less ventilation area. The reduction in ventilation area is the result of barriers that fail under the load caused by the full area break pressure spike, but remain intact for the partial area break.

Due to the extreme temperatures resulting from the superheated blowdown and limited vent paths to cooler surroundings, the temperatures of many of the volumes decrease slowly. Only those volumes representing enclosed rooms are at or near ambient conditions 800 seconds from the start of blowdown (ie, end of the simulation).

Although the peak temperature of Volume 11 is outside the qualification profile for the Turbine Building, the safety-related components in this area are not required to function in mitigating a small area MSLB. The only components in this area that perform a safety function are the steam generator and main steam line pressure transmitters. For a small area MSLB, reactor trip and safety injection occur on overpower  $\Delta T$  and low pressurizer pressure, respectively. The steam generator and main

steam line pressure transmitters do not provide input to these protective functions.

The pressure transmitters also perform the function of post-accident monitoring (PAM) instrumentation. Although the transmitters located in the Turbine Building may fail during a small area MSLB, redundant transmitters are located in the main steam support structure that would provide the required PAM capability.

In addition to Volume 11, The Break Volume, the following volumes are subject to temperature outside the harsh environment qualification profile or above-normal temperatures assumed for mild environments:

- (1) Volume 5. Area outside the auxiliary feedwater pump rooms on the 45-foot elevation of the Turbine Building.
- (2) Volume 9. Area between the west wall of the Turbine Building and the condensers, and including the areas immediately north and south of the turbine pedestal between Elevations 45 feet and 93 feet.
- (3) Volumes 17 and 18. The Emergency Diesel Generator (EDG) rooms.

For the case of Volume 5, the temperature peaks at 304°F momentarily before cooling to below the qualification profile temperature limit of 303°F. No safety-related equipment is located in this volume.

Volume 9 encompasses the area containing turbine first-stage pressure transmitters which provide inputs to reactor trip permissive P-13 and Engineered Safety Feature Actuation System (ESFAS). The temperature in this volume peaks at 306°F momentarily before cooling below the qualification profile limit of 303°F. This temperature peak occurs 310 seconds into the small area HELB event. The safety functions associated with these transmitters would not have been called upon to mitigate the small break accident. In any case, the safety functions would have been

performed prior to exceeding the temperature limits of the qualification profile. Reactor trip and safety injection actuation would occur within 60 seconds for the small area HELBs.

For Volumes 17 and 18, the EDG rooms, the elevated temperatures predicted in the analysis are not expected to occur. The analysis does not take into consideration the room cooling provided by the ventilation system. This system would actuate approximately 45 seconds into the 1.0 ft<sup>2</sup> break event, which is the worst-case event for EDG room temperatures. In the analysis, the EDG room temperatures do not change considerably from ambient conditions until approximately two minutes into the event. By this time, room cooling would be well established with the ventilation fans supplying cool outside air to the rooms.



## 5.0 DISCUSSION AND CONCLUSIONS

The results of the high-energy line break (HELB) analysis indicates that there are four types of volumes to consider for environmental qualification purposes. A description of each follows:

- (1) Break Compartment. Characterized by high temperatures and some pressurization. Slow temperature coastdown and step drop in pressure upon termination of blowdown.
- (2) Vented Compartments. Characterized by a faster temperature decrease than the break compartment as a result of unobstructed energy exchange with adjacent compartments and/or the atmosphere. Limited pressurization occurs.
- (3) Closed Compartments (Rooms). Characterized by slower temperature rise and slow recovery period resulting from limited vent capability. Overall, the environmental conditions of these compartments change only slightly from the initial ambient conditions.
- (4) Neighboring Compartments: Characterized by temperature rise and recovery comparable to the break volume, except that less pressurization occurs.

Table 8C-12 is an itemization of all equipment in the Turbine Building by Plant identification number, manufacturer, and model number. Also provided in Table 8C-12 is a description of each component's safety function and its location. Location is identified by Plant room number, elevation, and the volume number used in the thermal hydraulic analysis.

Most equipment important to safety in the Turbine Building is located in closed compartments and would not be exposed to harsh conditions following an HELB. Equipment important to safety that is not located

in room enclosures includes pressure transmitters, feedwater isolation components and cables to the A Train switchgear.

An environmental qualification review was performed and a justification for continued operations written for all equipment required for safe shutdown located in open areas of the Turbine Building<sup>(10)</sup>. In addition, a thermal lag analysis was performed for safety-related cables to demonstrate cable qualification for the peak temperature calculated via the RELAP analysis<sup>(11)</sup>. These reviews concluded equipment required for safe Plant shutdown was either environmentally qualified, was capable of performing its safety function prior to significant exposure to a harsh environment, or would fail in a manner not detrimental to Plant safety. The following permanent modifications were identified, in a Licensee Event Report, as necessary to ensure that safety-related equipment is either isolated from the effects of a HELB or is fully qualified for these effects<sup>(12)</sup>.

- (1) Modification of portions of the Turbine Building metal siding to permit venting and, hence, HELB energy release to the outside atmosphere. At some siding span locations, existing fasteners were replaced with pressure release fasteners which would release at reasonably low HELB overpressures but will resist design wind suction pressures. At other span locations, fastener capacities were increased to preclude the siding from becoming a secondary missile concern should venting occur.
- (2) Modification of heating, ventilating, and air conditioning (HVAC) paths for the remote shutdown panel room, auxiliary feedwater pump room (A and B trains), engineered safety features switchgear room (A train) to effectively isolate safety-related equipment from potential Turbine Building HELB environments.

- (3) Modification of roll-up doors and structural elements of other barriers as required to withstand potential HELB overpressures such as to maintain acceptable environments for the emergency diesel generator (A and B trains) main air intake, diesel auxiliary feedwater pump room (B train) and engineered safety features switchgear room (A train).
- (4) Replacement of the main steam line and turbine first stage pressure transmitters.
- (5) Replacement of the main feedwater control and bypass control valves solenoid valves, and a portion of cabling for the "A" component cooling water makeup pump.

All corrective action except for (5) above were completed during the 1987 refueling outage. Components in (5) above were replaced during the 1988 refueling outage.

In conclusion, the thermal-hydraulic analysis shows that in the event of a HELB, areas of the Turbine Building can experience elevated temperature and pressure conditions. In the event of a MSLB, these conditions may exist for several minutes. These elevated environmental conditions and the associated steam environment, designate certain areas of the Turbine Building to be a harsh environment for equipment environmental qualification.

## 6.0 REFERENCES

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2. IE Bulletin 79-01; Issued 2/8/79.
3. PGE-1004, "Trojan Nuclear Plant Analyses of Pipe System Breaks, Outside Containment", prepared for Portland General Electric by Bechtel Power Corporation, Revision 3, October 1975.
4. Babcock & Wilcox, "RELAP 4/MOD 6 - A Computer Program for Transient Thermal-Hydraulic Analysis", NPGD-TM-598, Revision J, Volumes I and II, August 1985.
5. WCAP 10961-P, "Steamline Break Mass/Energy Releases for Equipment Environmental Qualification Outside Containment - Report to the Westinghouse Owners Group High-Energy Line Break/Superheated Blowdowns Outside Containment Subgroup", October 1985, by Westinghouse Electric Corporation.
6. Westinghouse Owners Group Letter WOG-HELB/SBOC-020, "Transmittal of Implementation Suggestions", November 1, 1985.
7. Portland General Electric Calculation No. TNP 87-21, "RELAP Analysis of Modified Turbine Building", June 5, 1987.
8. Bechtel Western Power Corporation Letter, Portland General Electric Company, Trojan Nuclear Plant - Job 11760, High-Energy Line Breaks in Turbine Building - Blowdown Data, R. W. Fosse, February 3, 1987.
9. NRC Standard Review Plan, Section 6.2.1, "Subcompartment Analysis, Revision 2", July 1981.
10. Memorandum ANR-304-86M, "Trojan Nuclear Plant Evaluation of the Environmental Qualification of Electrical Equipment (EEEQ) in the Turbine Building and Justification for Continued Operation", October 27, 1986.
11. Portland General Electric Calculation No. TM-241, "Thermal Transient in Cables Due to High Energy Line Break", July 16, 1987.
12. Licensee Event Report 86-10, Revision 1, Deficiencies Identified in the Analysis of High Energy Line Breaks in the Turbine Building", January 30, 1987.
13. Portland General Electric Calculation No. TNP 87-42, "Calculation of Temperatures in EDG Rooms Following HELB Using RELAP4/MOD6", January 7, 1988.
14. Portland General Electric Calculation No. TNP 87-44, "Small Area Break Analysis of Turbine Building Using RELAP4/MOD6", May 11, 1988.

Table 8C-3

Mass and Energy Release for a Main Steam  
Line Break in the Turbine Building

Full Power

| <u>t</u><br><u>SEC.</u> | <u>m</u><br><u>LB/SEC.</u> | <u>h</u><br><u>BTU/LB</u> | <u>SUPERHEAT</u><br><u>BTU/LBM</u> | <u>NOTES</u>                                                            |
|-------------------------|----------------------------|---------------------------|------------------------------------|-------------------------------------------------------------------------|
| 0                       | 0                          | 1196.5                    |                                    | Inventory Blowdown<br>Total 10000 lbs.<br>- Steam at 530°F,<br>888 psia |
| 0.001                   | 509.                       | 1196.5                    |                                    |                                                                         |
| 0.002                   | 6263.                      | 1196.5                    |                                    |                                                                         |
| 0.003                   | 7970.                      | 1196.5                    |                                    |                                                                         |
| 0.0053                  | 8574.                      | 1196.5                    |                                    |                                                                         |
| 0.01                    | 8855.                      | 1196.5                    |                                    |                                                                         |
| 0.04                    | 10318.                     | 1196.5                    |                                    |                                                                         |
| 0.06                    | 10648.                     | 1196.5                    |                                    |                                                                         |
| 0.957                   | 10648.                     | 1196.5                    |                                    |                                                                         |
| 0.958                   | 8049.                      | 1194.                     |                                    | Westinghouse SG<br>- Blowdown; Turbine Stop<br>Valves Open              |
| 4.258                   | 6885.                      | 1198.                     |                                    |                                                                         |
| 4.958                   | 7597.                      | 1198.                     |                                    |                                                                         |
| 4.959                   | 3115.                      | 1198.                     |                                    | Stop Valve Closed; 41%<br>- Correction Factor                           |
| 10.358                  | 2859.                      | 1200.                     |                                    |                                                                         |
| 10.458                  | 2140.                      | 1200.                     |                                    | One MSIV Failed Open;<br>- No Correction                                |
| 15.958                  | 1756.                      | 1203.                     |                                    |                                                                         |
| 31.058                  | 1188.                      | 1204.                     |                                    |                                                                         |
| 66.058                  | 891.                       | 1203.                     | 0                                  |                                                                         |
| 81.058                  | 592.                       | 1248.                     | +49                                |                                                                         |
| 95.058                  | 134.                       | 1282.                     | +111                               |                                                                         |
| 267.058                 | 30.2                       | 1311.                     | +140                               |                                                                         |
| 401.058                 | 30.2                       | 1314.                     | +163                               |                                                                         |
| 600.058                 | 30.2                       | 1316.                     | +165                               |                                                                         |
| 600.059                 | 0                          | 1316.                     |                                    |                                                                         |

TABLE 8C-4

MASS AND ENERGY RELEASE FOR A 0.8 ft<sup>2</sup>  
MAIN STEAM LINE BREAK IN THE TURBINE BUILDING

Full Power

| <u>Time</u><br><u>(sec)</u> | <u>Flow</u><br><u>(lbm/sec)</u> | <u>Enthalpy</u><br><u>(Btu/lbm)</u> | <u>Superheat*</u><br><u>(Btu/lbm)</u> |
|-----------------------------|---------------------------------|-------------------------------------|---------------------------------------|
| 0.0                         | 1461                            | 1194                                |                                       |
| 10.0                        | 1318                            | 1196                                |                                       |
| 16.0                        | 1267                            | 1197                                |                                       |
| 24.6                        | 1639                            | 1192                                |                                       |
| 59.6                        | 1401                            | 1197                                |                                       |
| 100.1                       | 1174                            | 1201                                |                                       |
| 150.1                       | 997                             | 1203                                |                                       |
| 200.1                       | 961                             | 1203                                |                                       |
| 250.1                       | 960                             | 1203                                |                                       |
| 314.1                       | 956                             | 1203                                |                                       |
| 400.1                       | 835                             | 1222                                | +18                                   |
| 500.1                       | 566                             | 1247                                | +43                                   |
| 599.1                       | 185                             | 1278                                | +89                                   |

\* Above saturation enthalpy.

TABLE 8C-5

MASS AND ENERGY RELEASE FOR A 1.0 ft<sup>2</sup>  
MAIN STEAM LINE BREAK IN THE TURBINE BUILDING

Full Power

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| <u>Time</u><br><u>(sec)</u> | <u>Flow</u><br><u>(lbm/sec)</u> | <u>Enthalpy</u><br><u>(Btu/lbm)</u> | <u>Superheat*</u><br><u>(Btu/lbm)</u> |
|-----------------------------|---------------------------------|-------------------------------------|---------------------------------------|
| 0.0                         | 1805                            | 1194                                |                                       |
| 13.5                        | 1543                            | 1198                                |                                       |
| 13.6                        | 1701                            | 1198                                |                                       |
| 21.6                        | 1988                            | 1193                                |                                       |
| 50.1                        | 1692                            | 1198                                |                                       |
| 100.1                       | 1302                            | 1203                                |                                       |
| 150.1                       | 1159                            | 1204                                |                                       |
| 200.1                       | 1148                            | 1204                                |                                       |
| 319.1                       | 1100                            | 1211                                | +7                                    |
| 400.1                       | 630.5                           | 1253                                | +50                                   |
| 500.1                       | 129 .                           | 1287                                | +109                                  |
| 599.1                       | 120 .                           | 1284                                | +107                                  |

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\* Above saturation enthalpy.

TABLE 8C-6

MASS AND ENERGY RELEASE FOR A 1.2 ft<sup>2</sup>  
MAIN STEAM LINE BREAK IN THE TURBINE BUILDING

Full Power

| <u>Time</u><br><u>(sec)</u> | <u>Flow</u><br><u>(lbm/sec)</u> | <u>Enthalpy</u><br><u>(Btu/lbm)</u> | <u>Superheat*</u><br><u>(Btu/lbm)</u> |
|-----------------------------|---------------------------------|-------------------------------------|---------------------------------------|
| 0.0                         | 2141                            | 1194                                |                                       |
| 12.1                        | 1801                            | 1198                                |                                       |
| 20.0                        | 2310                            | 1194                                |                                       |
| 41.1                        | 2006                            | 1198                                |                                       |
| 100.1                       | 1422                            | 1203                                |                                       |
| 150.1                       | 1324                            | 1204                                |                                       |
| 200.1                       | 1318                            | 1204                                |                                       |
| 300.1                       | 1114                            | 1226                                | +24                                   |
| 350.1                       | 470                             | 1270                                | +72                                   |
| 400.1                       | 147                             | 1288                                | +111                                  |
| 450.1                       | 121                             | 1289                                | +116                                  |
| 500.1                       | 121                             | 1288                                | +115                                  |
| 599.1                       | 121                             | 1285                                | +112                                  |

\* Above saturation enthalpy.



TABLE 8C-7

PRESSURE RESPONSE OF TURBINE BUILDING COMPARTMENTS  
FOR A MAIN FEEDWATER LINE BREAK AT 100 PERCENT POWER

| Time<br>(seconds) | Compartment Number |      |      |      |      |      |      |      |      |
|-------------------|--------------------|------|------|------|------|------|------|------|------|
|                   | 1                  | 5    | 7    | 8    | 9    | 11   | 17   | 18   | 19   |
| 0.0               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |
| 0.01              | -                  | 15.0 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.02              | -                  | 15.2 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.03              | -                  | 15.2 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.04              | -                  | 15.1 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.05              | -                  | 15.0 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.06              | -                  | 14.9 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.07              | -                  | 14.7 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.08              | -                  | 14.6 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.09              | -                  | 14.6 | 14.7 | 14.7 | 14.7 | -    | 14.7 | 14.7 | 14.7 |
| 0.10              | 14.7               | 14.6 | 14.7 | 14.7 | 14.8 | 14.8 | 14.7 | 14.7 | 14.7 |
| 0.12              | -                  | 14.6 | 14.7 | 14.7 | 14.8 | -    | 14.7 | 14.7 | 14.7 |
| 0.14              | -                  | 14.7 | 14.7 | 14.7 | 14.8 | -    | 14.7 | 14.7 | 14.8 |
| 0.16              | -                  | 14.8 | 14.7 | 14.7 | 14.8 | -    | 14.7 | 14.7 | 14.8 |
| 0.2               | 14.7               | 14.8 | 14.7 | 14.7 | 14.8 | 14.7 | 14.7 | 14.7 | 14.8 |
| 0.3               | 14.7               | 14.7 | 14.7 | 14.8 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |
| 0.4               | 14.8               | 14.7 | 14.7 | 14.8 | 14.7 | 14.7 | 14.7 | 14.8 | 14.8 |
| 0.5               | 14.8               | 14.8 | 14.7 | 14.8 | 14.8 | 14.8 | 14.7 | 14.8 | 14.8 |
| 1.5               | 14.9               | 14.9 | 14.7 | 14.9 | 14.9 | 14.9 | 14.8 | 14.8 | 14.9 |
| 2.5               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |
| 3.5               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |
| 4.5               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |
| 5.0               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |

TABLE 8.1-8

TEMPERATURE RESPONSE OF TURBINE BUILDING COMPARTMENTS  
TO A MAIN FEEDWATER LINE BREAK AT 100 PERCENT POWER

| Time<br>(seconds) | Compartment Number |     |     |     |     |     |     |     |     |
|-------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|
|                   | 1                  | 3   | 5   | 7   | 8   | 9   | 17  | 18  | 19  |
| 0.00              | 104                | 104 | 104 | 134 | 104 | 104 | 104 | 104 | 104 |
| 0.10              | 104                | 103 | 134 | 104 | 104 | 105 | 104 | 104 | 105 |
| 0.40              | 105                | 105 | 168 | 105 | 105 | 105 | 105 | 105 | 105 |
| 0.50              | 105                | 106 | 174 | 105 | 105 | 105 | 105 | 105 | 105 |
| 2.00              | 104                | 127 | 206 | 105 | 106 | 105 | 105 | 105 | 106 |
| 5.00              | 104                | 154 | 212 | 104 | 102 | 105 | 104 | 104 | 104 |
| 10.00             | 104                | 169 | 212 | 102 | 102 | 127 | 104 | 104 | 108 |
| 15.00             | 104                | 170 | 212 | 100 | 102 | 157 | 104 | 104 | 120 |
| 20.00             | 104                | 174 | 209 | 99  | 104 | 170 | 104 | 104 | 137 |
| 25.00             | 105                | 170 | 179 | 98  | 107 | 175 | 103 | 103 | 150 |
| 30.00             | 106                | 169 | 169 | 97  | 110 | 175 | 103 | 103 | 159 |
| 35.00             | 106                | 170 | 170 | 96  | 112 | 173 | 102 | 103 | 163 |
| 40.00             | 106                | 169 | 170 | 95  | 113 | 171 | 102 | 102 | 166 |
| 45.00             | 107                | 168 | 169 | 95  | 115 | 170 | 101 | 102 | 167 |
| 50.00             | 107                | 167 | 168 | 94  | 116 | 169 | 101 | 101 | 168 |
| 55.00             | 107                | 166 | 167 | 94  | 117 | 168 | 100 | 101 | 168 |
| 60.00             | 107                | 165 | 166 | 94  | 119 | 167 | 100 | 100 | 168 |
| 65.00             | 107                | 164 | 165 | 93  | 120 | 166 | 100 | 100 | 168 |
| 70.00             | 108                | 163 | 164 | 93  | 120 | 165 | 99  | 100 | 167 |
| 75.00             | 108                | 163 | 163 | 93  | 121 | 164 | 99  | 99  | 167 |
| 80.00             | 108                | 162 | 163 | 93  | 121 | 164 | 98  | 99  | 166 |
| 85.00             | 108                | 161 | 162 | 92  | 121 | 163 | 98  | 99  | 166 |
| 90.00             | 108                | 160 | 161 | 92  | 121 | 162 | 98  | 98  | 165 |
| 95.00             | 108                | 160 | 160 | 92  | 121 | 161 | 97  | 98  | 165 |
| 100.00            | 108                | 159 | 160 | 92  | 121 | 161 | 97  | 98  | 164 |

TABLE 8C-9

PRESSURE RESPONSE OF TURBINE BUILDING COMPARTMENTS  
FOR A MAIN STEAM LINE BREAK AT 100 PERCENT POWER

| Time<br>(seconds) | Compartment Number |      |      |      |      |      |      |      |      |
|-------------------|--------------------|------|------|------|------|------|------|------|------|
|                   | 1                  | 5    | 7    | 8    | 9    | 11   | 17   | 18   | 19   |
| 0.0               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 |
| 0.01              | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 15.2 | 14.7 | 14.7 | 14.7 |
| 0.02              | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 15.8 | 14.7 | 14.7 | 14.7 |
| 0.03              | 14.7               | 14.8 | 14.7 | 14.7 | 14.7 | 16.2 | 14.7 | 14.7 | 14.7 |
| 0.04              | 14.7               | 14.8 | 14.7 | 14.7 | 14.7 | 16.4 | 14.7 | 14.7 | 14.8 |
| 0.05              | 14.7               | 14.9 | 14.7 | 14.7 | 14.8 | 16.4 | 14.7 | 14.7 | 15.0 |
| 0.06              | 14.7               | 15.0 | 14.7 | 14.7 | 14.8 | 16.3 | 14.7 | 14.7 | 15.0 |
| 0.07              | 14.7               | 15.1 | 14.7 | 14.7 | 14.8 | 16.0 | 14.7 | 14.7 | 15.1 |
| 0.08              | 14.7               | 15.2 | 14.7 | 14.7 | 14.9 | 15.6 | 14.7 | 14.7 | 15.2 |
| 0.09              | 14.7               | 15.3 | 14.7 | 14.8 | 15.0 | 15.3 | 14.7 | 14.7 | 15.3 |
| 0.10              | 14.7               | 15.4 | 14.7 | 14.8 | 15.1 | 15.0 | 14.7 | 14.7 | 15.4 |
| 0.11              | 14.8               | 15.5 | 14.7 | 14.8 | 15.2 | 14.8 | 14.7 | 14.7 | 15.4 |
| 0.12              | 14.8               | 15.5 | 14.7 | 14.8 | 15.3 | 14.6 | 14.7 | 14.7 | 15.4 |
| 0.13              | 14.8               | 15.4 | 14.7 | 14.8 | 15.4 | 14.6 | 14.7 | 14.7 | 15.4 |
| 0.14              | 14.8               | 15.3 | 14.7 | 14.8 | 15.4 | 14.6 | 14.7 | 14.7 | 15.3 |
| 0.15              | 14.8               | 15.3 | 14.7 | 14.8 | 15.5 | 14.7 | 14.7 | 14.7 | 15.3 |
| 0.16              | 14.9               | 15.2 | 14.7 | 14.9 | 15.5 | 14.8 | 14.7 | 14.7 | 15.2 |
| 0.17              | 14.9               | 15.1 | 14.7 | 14.9 | 15.5 | 14.9 | 14.8 | 14.8 | 15.1 |
| 0.18              | 14.9               | 15.1 | 14.7 | 14.9 | 15.5 | 15.0 | 14.8 | 14.8 | 15.0 |
| 0.19              | 14.9               | 15.0 | 14.7 | 14.9 | 15.5 | 15.0 | 14.8 | 14.8 | 15.0 |
| 0.20              | 14.9               | 15.0 | 14.7 | 14.9 | 15.4 | 15.1 | 14.8 | 14.8 | 15.0 |
| 0.22              | 15.0               | 15.1 | 14.8 | 15.0 | 15.3 | 15.1 | 14.8 | 14.8 | 15.1 |
| 0.24              | 15.0               | 15.1 | 14.8 | 15.0 | 15.1 | 15.1 | 14.8 | 14.8 | 15.1 |
| 0.26              | 15.1               | 15.1 | 14.8 | 15.1 | 15.0 | 15.1 | 14.8 | 14.8 | 15.2 |
| 0.28              | 15.1               | 15.1 | 14.8 | 15.1 | 14.9 | 15.1 | 14.8 | 14.8 | 15.2 |
| 0.30              | 15.1               | 15.0 | 14.8 | 15.2 | 14.8 | 15.0 | 14.8 | 14.9 | 15.2 |
| 0.32              | 15.2               | 15.0 | 14.8 | 15.2 | 14.8 | 14.9 | 14.8 | 14.9 | 15.1 |
| 0.34              | 15.2               | 14.9 | 14.8 | 15.2 | 14.8 | 14.8 | 14.8 | 14.9 | 15.0 |
| 0.36              | 15.2               | 14.9 | 14.9 | 15.2 | 14.8 | 14.7 | 14.9 | 14.9 | 14.9 |
| 0.38              | 15.2               | 14.8 | 15.0 | 15.2 | 14.9 | 14.6 | 14.9 | 14.9 | 14.8 |
| 0.40              | 15.2               | 14.8 | 15.0 | 15.2 | 14.9 | 14.7 | 14.9 | 14.9 | 14.7 |
| 0.42              | 15.2               | 14.8 | 15.0 | 15.2 | 14.9 | 14.7 | 14.9 | 15.0 | 14.8 |
| 0.44              | 15.1               | 14.8 | 15.0 | 15.2 | 14.9 | 14.8 | 15.0 | 15.0 | 14.9 |
| 0.46              | 15.1               | 14.9 | 15.0 | 15.2 | 14.9 | 14.8 | 15.0 | 15.0 | 15.0 |
| 0.48              | 15.1               | 14.9 | 15.0 | 15.2 | 14.9 | 14.8 | 15.1 | 15.0 | 15.0 |
| 0.5               | 15.1               | 15.0 | 15.0 | 15.1 | 14.9 | 14.9 | 15.1 | 15.1 | 15.0 |
| 0.6               | 15.0               | 15.0 | 15.0 | 15.0 | 15.0 | 14.8 | 15.1 | 15.1 | 14.9 |
| 0.7               | 14.9               | 14.8 | 14.9 | 14.9 | 14.8 | 14.7 | 15.0 | 14.9 | 14.8 |
| 0.8               | 14.7               | 14.7 | 14.8 | 14.7 | 14.7 | 14.5 | 14.8 | 14.8 | 14.7 |
| 0.9               | 14.6               | 14.6 | 14.7 | 14.7 | 14.6 | 14.4 | 14.7 | 14.7 | 14.6 |
| 1.0               | 14.5               | 14.5 | 14.6 | 14.5 | 14.5 | 14.4 | 14.6 | 14.6 | 14.5 |
| 2.0               | 14.8               | 14.8 | 14.8 | 14.8 | 14.8 | 14.7 | 14.8 | 14.8 | 14.8 |
| 5.0               | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.6 | 14.7 | 14.7 | 14.7 |
| 10.0              | 14.7               | 14.7 | 14.7 | 14.7 | 14.7 | 14.6 | 14.7 | 14.7 | 14.7 |

TABLE 8C-10

TEMPERATURE RESPONSE OF TURBINE BUILDING COMPARTMENTS  
TO A MAIN STEAM LINE BREAK AT 100 PERCENT POWER

| Time<br>(seconds) | Compartment Number |     |     |     |     |     |     |     |     |     |
|-------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                   | 1                  | 3   | 5   | 7   | 8   | 9   | 11  | 17  | 18  | 19  |
| 0.0               | 104                | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 |
| 0.45              | 109                | 132 | -   | 105 | 109 | 106 | 269 | 106 | 106 | 108 |
| 0.5               | 108                | 135 | 107 | 105 | 108 | 107 | 278 | 106 | 106 | 109 |
| 5.0               | 110                | 269 | 140 | 103 | 105 | 138 | 314 | 105 | 105 | 119 |
| 30.0              | 111                | 253 | 230 | 97  | 113 | 218 | 296 | 103 | 103 | 195 |
| 55.0              | 113                | 243 | 222 | 94  | 132 | 266 | 294 | 101 | 101 | 277 |
| 80.0              | 118                | 268 | 252 | 93  | 143 | 273 | 319 | 99  | 99  | 297 |
| 85.0              | 119                | 279 | -   | 93  | 144 | 273 | 326 | 98  | 99  | 304 |
| 90.0              | 120                | 289 | -   | 92  | 142 | 273 | 327 | 98  | 99  | 308 |
| 95.0              | 120                | 294 | -   | 92  | 140 | 273 | 318 | 98  | 98  | 310 |
| 105.0             | 121                | 292 | 286 | 92  | 139 | 275 | 314 | 97  | 98  | 308 |
| 130.0             | 122                | 299 | 291 | 92  | 130 | 281 | 320 | 97  | 97  | 280 |
| 155.0             | 123                | 306 | 285 | 92  | 127 | 287 | 320 | 96  | 97  | 251 |
| 180.0             | 123                | 299 | 279 | 92  | 124 | 295 | 320 | 96  | 97  | 248 |
| 200.0             | 124                | 295 | 286 | 92  | 120 | 301 | 320 | 96  | 97  | 228 |
| 220.0             | 124                | 291 | -   | 92  | 118 | 304 | 316 | 96  | 97  | 221 |
| 250.0             | 126                | 283 | 275 | 92  | 116 | 297 | 299 | 96  | 97  | 206 |
| 300.0             | 128                | 265 | 260 | 92  | 120 | 268 | 272 | 96  | 97  | 188 |
| 350.0             | 132                | 251 | 248 | 94  | 131 | 255 | 257 | 100 | 100 | 139 |
| 400.0             | 136                | 241 | 238 | 96  | 135 | 244 | 250 | 105 | 104 | 134 |
| 450.0             | 139                | 235 | 232 | 98  | 137 | 236 | 246 | 108 | 107 | 136 |
| 500.0             | 142                | 232 | 229 | 100 | 137 | 232 | 244 | 110 | 109 | 137 |
| 550.0             | 144                | 232 | 229 | 101 | 139 | 232 | 243 | 112 | 111 | 138 |
| 600.0             | 146                | 233 | 230 | 103 | 140 | 232 | 244 | 114 | 112 | 139 |
| 625.0             | 147                | 223 | -   | 103 | 140 | 229 | 217 | 114 | 112 | 140 |
| 635.0             | 147                | 220 | -   | 103 | 140 | 225 | 212 | 114 | 112 | 140 |
| 650.0             | 147                | 214 | 214 | 102 | 140 | 219 | 205 | 114 | 112 | 140 |
| 700.0             | 148                | 199 | 198 | 100 | 138 | 203 | 183 | 113 | 111 | 139 |

TABLE 8C-11

WORST-CASE TEMPERATURE RESPONSE OF TURBINE BUILDING  
COMPARTMENTS TO PARTIAL AREA MAIN STEAM LINE BREAK  
AT 100 PERCENT POWER

| <u>Compartment<br/>No.</u> | <u>Time<br/>(Seconds)</u> | <u>Temperature<br/>(°F)</u> |
|----------------------------|---------------------------|-----------------------------|
| 1                          | 700                       | 198                         |
| 5                          | 320                       | 304                         |
| 7                          | 495                       | 145                         |
| 8                          | 520                       | 185                         |
| 9                          | 310                       | 306                         |
| 11                         | 395                       | 469                         |
| 17                         | 490                       | 162                         |
| 18                         | 499                       | 144                         |
| 19                         | 110                       | 278                         |

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SHEET 1 OF 7

| PLANT<br>ID NUMBER | MANUFACTURER        | MODEL NUMBER      | SAFETY<br>FUNCTION   | ROOM<br>NUMBER | VOLUME<br>NUMBER | ELEVATION<br>(FEET) |
|--------------------|---------------------|-------------------|----------------------|----------------|------------------|---------------------|
| A 1                |                     |                   | AC POWER DISTR       | 107            | 20               | 69                  |
| ATB 701            | GE                  | NO NAMEPLATE      | ELEC CONN            | 91             | 16               | 45                  |
| ATB 702            | GE                  | 264B965           | ELEC CONN            | 91             | 16               | 45                  |
| ATB 703            | GE                  | 264B965           | ELEC CONN            | C160           | 14               | 45                  |
| ATB 704            | GE                  | 264B965           | ELEC CONN            | C160           | 14               | 45                  |
| ATB 705            | GE                  | EB                | ELEC CONN            | 107            | 20               | 69                  |
| ATB 706            | GE                  | EB                | ELEC CONN            | 107            | 20               | 69                  |
| ATB 711            | GE                  | 264B965           | ELEC CONN            | 113            | 1                | 93                  |
| B 1                |                     |                   | AC POWER DISTR       | 107            | 20               | 69                  |
| B 3                |                     |                   | AC POWER DISTR       | 107            | 20               | 69                  |
| B 21               |                     |                   | AC POWER DISTR       | 107            | 20               | 69                  |
| B 23               |                     |                   | AC POWER DISTR       | 107            | 20               | 69                  |
| B 25               |                     |                   | AC POWER DISTR       | 107            | 20               | 69                  |
| BTB 701            | NO NAMEPLATE        |                   | ELEC CONN            | 90             | 15               | 45                  |
| BTB 703            | WOODWARD            | 8271-179          | ELEC CONN            | 90             | 15               | 45                  |
| BTB 704            | TB FIELD FABRICATED | DIODE IRC 40HF100 | ELEC CONN/ISLN       | 90             | 15               | 45                  |
| BTB 706            | GE                  | EB-5              | ELEC CONN            | 90             | 15               | 45                  |
| BTB 711            | GE                  | EB-5              | ELEC CONN            | 113            | 1                | 93                  |
| C 101              |                     |                   | CONTROL              | 85             | 18               | 45                  |
| C 102              |                     |                   | CONTROL              | 86             | 17               | 45                  |
| C 160 A            |                     |                   | INDICATION & CONTROL | C160           | 14               | 45                  |
| C 160 B            |                     |                   | INDICATION & CONTROL | C160           | 14               | 45                  |

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| <u>PLANT<br/>ID NUMBER</u> | <u>MANUFACTURER</u> | <u>MODEL NUMBER</u> | <u>SAFETY<br/>FUNCTION</u> | <u>ROOM<br/>NUMBER</u> | <u>VOLUME<br/>NUMBER</u> | <u>ELEVATION<br/>(FEET)</u> |
|----------------------------|---------------------|---------------------|----------------------------|------------------------|--------------------------|-----------------------------|
| FT 510                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 63                          |
| FT 511                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 63                          |
| FT 520                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 68                          |
| FT 521                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 68                          |
| FT 530                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 63                          |
| FT 531                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 63                          |
| FT 540                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 63                          |
| FT 541                     | BARTON              | 384                 | REACTOR TRIP               | 103                    | 11                       | 63                          |
| G 101                      | NO NAMEPLATE        |                     | 4.16KV POWER SUPPLY        | 85                     | 18                       | 45                          |
| G 102                      |                     |                     | FIELD VALVE                | 85                     | 18                       | 45                          |
| G 103                      | GE                  | 275X630C377         | NEUTRAL GND RESISTOR       | 85                     | 18                       | 45                          |
| G 201                      | NO NAMEPLATE        |                     | 4.16KV POWER SUPPLY        | 86                     | 17                       | 45                          |
| G 202                      |                     |                     | FIELD VALVE                | 86                     | 17                       | 45                          |
| G 203                      | GE                  | 275X630C377         | NEUTRAL GND RESISTOR       | 86                     | 17                       | 45                          |
| LS 4905 A                  | BARTON              | 288A                | CONTROL                    | 85                     | 18                       | 45                          |
| LS 4905 B                  | BARTON              | 288A                | CONTROL                    | 86                     | 17                       | 45                          |
| LS 4909 A                  | BARTON              | 288A                | CONTROL                    | 90                     | 15                       | 45                          |
| LS 4909 B                  | BARTON              | 288A                | CONTROL                    | 90                     | 15                       | 45                          |
| LS 4911 A                  | BARTON              | 288A                | CONTROL ALARM              | 85                     | 18                       | 45                          |
| LS 4911 B                  | BARTON              | 288A                | CONTROL ALARM              | 86                     | 17                       | 45                          |
| LS 5201 C                  | ROCHESTER           | ET-1214             | SEE NOTES                  | 90                     | 15                       | 45                          |
| LS 5265                    | ROCHESTER           | ET-1214             | SEE NOTES                  | 90                     | 15                       | 45                          |
| MO 3045 A                  | LIMITORQUE          | SMB-00-10           | BACK UP FDW SOURCE         | 91                     | 16                       | 47                          |

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SHEET 3 OF 7

| PLANT<br>ID NUMBER | MANUFACTURER | MODEL NUMBER | SAFETY<br>FUNCTION | ROOM<br>NUMBER | VOLUME<br>NUMBER | ELEVATION<br>(FEET) |
|--------------------|--------------|--------------|--------------------|----------------|------------------|---------------------|
| MO 3045 B          | LIMITORQUE   | SMB-00-10    | BACK UP FDW SOURCE | 90             | 15               | 47                  |
| MO 3060 B          | LIMITORQUE   | SMB-000      | LOW COOLING WATER  | 90             | 15               | 45                  |
| MO 3071            | LIMITORQUE   | SMB-000      | THROTTLE VALVE     | 91             | 16               | 45                  |
| MO 3170            | LIMITORQUE   | SMB-000      | CONTROL VALVE      | 91             | 16               | 45                  |
| MO 4903 A          | LIMITORQUE   | SMB-000      | FUEL TRANSFER      | 85             | 18               | 45                  |
| MO 4903 B          | LIMITORQUE   | SMB-000      | FUEL TRANSFER      | 86             | 17               | 45                  |
| MO 4907 A          | LIMITORQUE   | SMB-000      | FUEL TRANSFER      | 90             | 15               | 45                  |
| MO 4907 B          | LIMITORQUE   | SMB-000      | FUEL TRANSFER      | 90             | 15               | 45                  |
| MP 168             | BALDOR       | 27384-11925  | PUMP MOTOR         | 90             | 15               | 45                  |
| MV 163 A           | WESTINGHOUSE | TBDP         | ROOM COOLING       | 107            | 20               | 69                  |
| MV 163 B           | WESTINGHOUSE | TBDP         | ROOM COOLING       | 107            | 20               | 69                  |
| MV 163 C           | WESTINGHOUSE | TBDP         | ROOM COOLING       | 107            | 20               | 69                  |
| MV 164             | WESTINGHOUSE | TBDP         | ROOM COOLING       | 107            | 20               | 69                  |
| MVC 131 A          | RELIANCE     | TYPE P       | ROOM AIR EXHAUST   | 85             | 18               | 45                  |
| MVC 131 B          | RELIANCE     | TYPE P       | ROOM AIR EXHAUST   | 85             | 18               | 45                  |
| MVC 132 A          | RELIANCE     | TYPE P       | ROOM AIR EXHAUST   | 86             | 17               | 45                  |
| MVC 132 B          | RELIANCE     | TYPE P       | ROOM AIR EXHAUST   | 86             | 17               | 45                  |
| MVC 161            | RELIANCE     | TYPE P       | ROOM AIR SUPPLY    | 85             | 18               | 45                  |
| MVC 162            | RELIANCE     | TYPE P       | ROOM AIR SUPPLY    | 86             | 17               | 45                  |
| MVC 166            | RELIANCE     | TYPE P       | ROOM AIR SUPPLY    | 91             | 16               | 45                  |
| MVC 167            | RELIANCE     | TYPE P       | ROOM AIR EXHAUST   | 87             | 9                | 45                  |
| MVC 168            | RELIANCE     | TYPE P       | ROOM AIR EXHAUST   | 89             | 14               | 45                  |

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| <u>PLANT<br/>ID NUMBER</u> | <u>MANUFACTURER</u> | <u>MODEL NUMBER</u> | <u>SAFETY<br/>FUNCTION</u> | <u>ROOM<br/>NUMBER</u> | <u>VOLUME<br/>NUMBER</u> | <u>ELEVATION<br/>(FEET)</u> |
|----------------------------|---------------------|---------------------|----------------------------|------------------------|--------------------------|-----------------------------|
| PS 3072 C                  | ROCHESTOR           | ET 1215             | TRIP TURBINE PUMP          | 89                     | 14                       | 45                          |
| PS 3072 D                  | ROCHESTOR           | ET 1215             | TRIP DIESEL PUMP           | 90                     | 15                       | 45                          |
| PS 3073 X                  | MERCOID CONTROL     | DA33-804            | OPERATOR SPEED INCR        | 90                     | 15                       | 45                          |
| PT 505                     | ROSEMOUNT           | 1153GD8             | FDW ISOLATION              | 87                     | 9                        | 48                          |
| PT 506                     | ROSEMOUNT           | 1153GD8             | FDW ISOLATION              | 87                     | 9                        | 50                          |
| PT 514                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 516                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 524                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 526                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 534                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 536                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 544                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 546                     | ROSEMOUNT           | 1153GD9             | SI/PAM                     | 103                    | 11                       | 63                          |
| PT 2210                    | FISCHER & PORTER    | 50EP1041BCSB        | PAM                        | 103                    | 11                       | 66                          |
| PT 2230                    | FISCHER & PORTER    | 50EP1041BCSB        | PAM                        | 103                    | 11                       | 66                          |
| PT 2250                    | FISCHER & PORTER    | 50EP1041BCSB        | PAM                        | 103                    | 11                       | 68                          |
| PT 2270                    | FISCHER & PORTER    | 50EP1041BCSB        | PAM                        | 103                    | 11                       | 66                          |
| PT 3072 A                  | FISHER/PORTER       | 55PD1111A           | LOW PRESS TRIP             | 91                     | 16                       | 45                          |
| PT 3072 B                  | FISHER/PORTER       | 55PD1111A4A         | LOW PRESS TRIP             | 90                     | 15                       | 45                          |
| PT 3083 A                  | BARTON              | 393                 | CONTROL PUMP SPEED         | 91                     | 16                       | 45                          |
| PT 3083 B                  | BARTON              | 393                 | CONTROL PUMP SPEED         | 91                     | 16                       | 45                          |
| PY 3072 A                  | FISHER/PORTER       | 50EK1000            | SIGNAL ISOLATION           | 89                     | 14                       | 45                          |
| PY 3072 B                  | FISHER/PORTER       | 50EK1000            | SIGNAL ISOLATION           | 90                     | 15                       | 45                          |

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| PLANT<br>ID NUMBER | MANUFACTURER | MODEL NUMBER       | SAFETY<br>FUNCTION   | ROOM<br>NUMBER | VOLUME<br>NUMBER | ELEVATION<br>(FEET) |
|--------------------|--------------|--------------------|----------------------|----------------|------------------|---------------------|
| Q 71               | SAB-NIFE     | (30) H410-2        | AFW DIESEL BATTERY   | 90             | 15               | 45                  |
| Q 73               |              |                    | AFW DIESEL CONTROL   | 90             | 15               | 45                  |
| Q 80               | SAB-NIFE     | SCBF100-24-25      | FLOAT BTRY CHARGE    | 90             | 15               | 45                  |
| Q 318 A            | WESTINGHOUSE | N/A                | POWER SUPPLY         | 107            | 20               | 69                  |
| QK 107 B           |              |                    | DIESEL AUTO START    | C160           | 14               | 45                  |
| QMP 168            |              |                    | SPEED INCREASER      | 90             | 15               | 45                  |
| RT 10400           | POWERS       | SERIES 90 MODEL SS | SEE NOTES            | 86             | 17               | 45                  |
| RT 10401           | POWERS       | SERIES 90 MODEL SS | SEE NOTES            | 85             | 18               | 45                  |
| SV 510 A           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 510 B           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 520 A           | ASCO         | LB8300C58          | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 520 B           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 530 A           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 530 B           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 540 A           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 540 B           | ASCO         | LB8300C58RU        | FDW ISOLATION        | 113            | 1                | 107                 |
| SV 2993 A1         | ASCO         | WP8300C61RU        | FDW BYPASS ISOLATION | 113            | 1                | 103                 |
| SV 2993 A2         | ASCO         | WP8300C61RU        | FDW BYPASS ISOLATION | 113            | 1                | 103                 |
| SV 2993 B1         | ASCO         | WP8300C61RU        | FDW BYPASS ISOLATION | 113            | 1                | 103                 |
| SV 2993 B2         | ASCO         | WP8300C61RU        | FDW BYPASS ISOLATION | 113            | 1                | 103                 |
| SV 2993 C1         | ASCO         | WP8300C61RU        | FDW BYPASS ISOLATION | 113            | 1                | 103                 |
| SV 2993 C2         | ASCO         | WP8300C61RU        | CONTROL VALVE        | 113            | 1                | 103                 |

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| <u>PLANT<br/>ID NUMBER</u> | <u>MANUFACTURER</u> | <u>MODEL NUMBER</u> | <u>SAFETY<br/>FUNCTION</u> | <u>ROOM<br/>NUMBER</u> | <u>VOLUME<br/>NUMBER</u> | <u>ELEVATION<br/>(FEET)</u> |
|----------------------------|---------------------|---------------------|----------------------------|------------------------|--------------------------|-----------------------------|
| SV 2993 D1                 | ASCO                | WP8300C61RU         | CONTROL VALVE              | 113                    | 1                        | 103                         |
| SV 2993 D2                 | ASCO                | WP8300C61RU         | CONTROL VALVE              | 113                    | 1                        | 103                         |
| SV 3712 A                  | ASCO                | NP8321A5E           | COOLING WATER              | 85                     | 18                       | 45                          |
| SV 3712 B                  | ASCO                | NP8321A5E           | COOLING WATER              | 86                     | 17                       | 45                          |
| SV 3714                    | ASCO                | NP8321A5E           | SC I/II                    | 86                     | 17                       | 45                          |
| SV 3725                    | ASCO                | NP8321A5E           | SC I/II                    | 85                     | 18                       | 45                          |
| UCDA 1                     | PYROTRONICS         | N/A                 | SEE NOTES                  | 86                     | 17                       | 45                          |
| X 11                       |                     |                     | VOLTAGE REDUCTION          | 107                    | 20                       | 69                          |
| X 13                       |                     |                     | VOLTAGE REDUCTION          | 107                    | 20                       | 69                          |
| X 40                       | HEVI-DUTY           | HSIF7.5A (1 PHASE)  | VOLTAGE RDCN, CH A         | 107                    | 20                       | 69                          |
| ZS 510                     | NAMCO               | D2400XR2            | FDW ISOLATION              | 113                    | 1                        | 107                         |
| ZS 520                     | NAMCO               | D2400XR2            | FDW ISOLATION              | 113                    | 1                        | 107                         |
| ZS 530                     | NAMCO               | D2400XR2            | FDW ISOLATION              | 113                    | 1                        | 107                         |
| ZS 540                     | NAMCO               | D2400X              | FDW ISOLATION              | 113                    | 1                        | 107                         |
| ZS 2993 A                  | SA                  | TYPE 304            | FDW BYPASS ISOLATION       | 113                    | 1                        | 103                         |
| ZS 2993 B                  | SA                  | TYPE 304            | FDW BYPASS ISOLATION       | 113                    | 1                        | 103                         |
| ZS 2993 C                  | SA                  | TYPE 304            | FDW BYPASS ISOLATION       | 113                    | 1                        | 103                         |
| ZS 2993 D                  | SA                  | TYPE 304            | FDW BYPASS ISOLATION       | 113                    | 1                        | 103                         |
| ZS 3071 A                  | NAMCO               | D2400XR2            | AFW INLET VALVE            | 91                     | 16                       | 45                          |
| ZS 3071 B                  | NAMCO               | D2400XR2            | AFW INLET VALVE            | 91                     | 16                       | 45                          |
| ZS 3712 A                  | NAMCO               | D2400X              | INDICATION                 | 85                     | 18                       | 45                          |
| ZS 3712 B                  | NAMCO               | D2400X2SR           | INDICATION                 | 86                     | 17                       | 45                          |
| ZS 3714                    | NAMCO               | D2400X2SR           | ISOLATION SEAL IN          | 86                     | 17                       | 45                          |

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SHEET 7 OF 7

| <u>PLANT<br/>ID NUMBER</u> | <u>MANUFACTURER</u> | <u>MODEL NUMBER</u> | <u>SAFETY<br/>FUNCTION</u> | <u>ROOM<br/>NUMBER</u> | <u>VOLUME<br/>NUMBER</u> | <u>ELEVATION<br/>(FEET)</u> |
|----------------------------|---------------------|---------------------|----------------------------|------------------------|--------------------------|-----------------------------|
| ZS 3725                    | NAMCO               | D2400X              | ISOLATION SEAL IN          | 85                     | 18                       | 45                          |

Portland General Electric  
Nuclear Division

MEMORANDUM

TO: Document Control Desk, USNRC

TDW-661-88

FROM: T. D. Walt *TDW*

DATE: August 31, 1988

SUBJECT: Transmittal of PGE Topical Report

Enclosed is your copy of Amendment 5 to PGE-1025, "Environmental Qualification Program Manual".

Please acknowledge receipt by completeing the lower portion of this transmittal and returning it to the location given below.

TDW/mew  
Enclosure

-----  
ACKNOWLEDGEMENT

PGE-1025  
Environmental Qualification Program Manual  
Amendment 5

I hereby acknowledge receipt of Controlled Copy Number(s) 52-62  
of the subject document.

\_\_\_\_\_  
Signature of Copy Holder

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Date

\*\* Return to: Mary E. Wagner, NSRD SB-Bridge  
Portland General Electric  
121 S. W. Salmon Street  
Portland OR 97204

*A048*  
*1/11*