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October 22, 1985
ST-HL-AE-1435
File No.: G9.17

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Responses to DSER/FSAR Items
Regarding Section 3.11N

Dear Mr. Knighton:

The attachment enclosed provides STP's response to Draft Safety Evaluation Report (DSER) or Final Safety Analysis Report (FSAR) items.

The item numbers listed below correspond to those assigned on STP's internal list of items for completion which includes open and confirmatory DSER items, STP FSAR open items and open NRC questions. This list was given to your Mr. N. Prasad Kadambi on October 8, 1985 by our Mr. M. E. Powell.

The attachment includes mark-ups of FSAR pages which will be incorporated in a future FSAR amendment unless otherwise noted below.

The attachment covers NSSS scope only and is, therefore, a partial response to the following listed items:

Attachment	Item No.*	Subject
1	D 3.11-2 D 3.11-4 D 3.11-5 D 3.11-6 D 3.11-7 D 3.11-8 D 3.11-9	Section 3.11N on Environmental Design of Mechanical and Electrical Equipment (NSSS)

*Legend
D - DSER Open Item
C - DSER Confirmatory Item
F - FSAR Open Item
Q - FSAR Question Response Item

Ll/DSER/an

If you should have any questions concerning this matter, please contact Mr. Powell at (713) 993-1328.

Very truly yours,

M. R. Wisenburg
Manager, Nuclear Licensing

CAA/bl

Attachments: See above

L1/DSER/aq

cc:

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Revised 9/25/85

L1/DSER/aq

Attachment 1

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3.11N ENVIRONMENTAL DESIGN OF MECHANICAL AND ELECTRICAL EQUIPMENT (NSSS)

This section presents information to demonstrate that the safety-related electrical equipment and active mechanical equipment of the Engineered Safety Features (ESFs) and the Reactor Protection Systems (RPSs) are capable of performing their designated safety-related functions while exposed to applicable normal, abnormal, test, accident, and post-accident environmental conditions. The information presented includes identification of the safety-related equipment that is within the scope of the Westinghouse Nuclear Steam Supply System (NSSS). For each item of equipment, the applicable environmental parameters and a description of the qualification process employed to demonstrate the required environmental capability are provided. The seismic qualification of safety-related ~~mechanical and~~ electrical equipment is presented in Section 3.10N. NSSS

Insert A

3.11N.1 Equipment Identification and Environmental Conditions

Insert B

A complete list of safety-related equipment within the Westinghouse NSSS scope of supply that is required to function during and subsequent to an accident is presented in Table 3.11N-1. The plant specific environmental parameters are presented for normal operating, abnormal, and for accident conditions.

3.11N.2 Qualification Tests and Analysis

3.11N.2.1 Environmental Qualification Criteria. The methods of meeting the general requirements for environmental design and qualification of safety-related equipment as described by General Design Criteria (GDC) 1, 2, 4, and 23 are described in Section 3.1. Additional specific information concerning the implementation of GDC 23 is provided in Section 7.2. The general methods of implementing the requirements of Appendix B to 10CFR Part 50 are described in the Westinghouse Water Reactor Division Quality Assurance Plan (WCAP-8370). Recommendations contained in Regulatory Guides (RGs) 1.40, 1.73, and 1.89 concerning environmental qualification are met.

Westinghouse meets the Institute of Electrical and Electronic Engineers (IEEE) Standard 323-1974, ~~including IEEE Standard 323a-1975, The Nuclear Power Engineering Committee (NPEC) Position Statement of July 24, 1975,~~ by either type test, operating experience, analysis, or an appropriate combination of these methods. Westinghouse meets this commitment employing the methodology described in WCAP-8587. This WCAP was reviewed and accepted by the NRC through the issuance of a Safety Evaluation Report (SER) on November 10, 1983.

Insert C

3.11N.2.2 Performance Requirements for Environmental Qualification. In response to the NRC staff request for additional detailed information on the qualification program, Westinghouse submitted Supplement 1 to WCAP-8587. ~~The latest revision of this~~ This supplement, ~~Supplement 1, WCAP-8587,~~ contains an equipment qualification data package (EQDP) for every item of safety-related electrical equipment supplied by Westinghouse within the NSSS scope of supply. Table 3.10N-1 identifies the equipment supplied by Westinghouse for this

INSERT A

NSSS passive mechanical equipment is qualified by the applicant in accordance with the methodology given in Section 3.11.2.

INSERT B

A complete list of safety-related electrical and active mechanical equipment within the NSSS scope of supply that is required to function during and subsequent to an accident is provided in the applicant's 10CFR50.49 submittal. In addition, this submittal provides the equipment qualification environmental parameters for normal, abnormal, and accident conditions and qualified life. A list of all category 1 and 2 post-accident monitoring equipment (in response to RG 1.97, Rev. 2) that is included in the equipment qualification program is provided in Table 7.5-1.

INSERT C

Commensurate with the restrictions placed on time margin, plant specific accident conditions, maintenance and surveillance programs, and additional equipment-specific supporting information as delineated by the SER, the NRC had concluded that WCAP-8587 complies with the NRC environmental requirements as codified by 10 CFR 50.49 and its subordinate Regulatory Guides, NUREG's and IEEE Standards.

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application and identifies the applicable EQDP, ~~contained in Supplement 1 of WCAP-8587.~~

Each EQDP ~~in Supplement 1 of WCAP-8587~~ contains a section entitled, "Performance Specification." This specification establishes the safety-related functional requirements of the equipment to be demonstrated under normal, abnormal, test, accident, and post-accident conditions. The environmental qualification parameters, e.g., temperature, humidity, pressure, radiation, etc., employed by Westinghouse for generic qualification purposes are also identified in the specification, as applicable.

WCAP 8587 describes the

3.11N.2.3 Methods and Procedures for Environmental Qualification. ~~The basic~~ methodology ~~to be~~ employed by Westinghouse for qualification of safety-related electrical equipment, ~~is described in WCAP-8587.~~ Each EQDP (Supplement 1, WCAP-8587) contains a description of the qualification ~~program~~ plan for ~~the~~ its piece of equipment. Qualification may be demonstrated by either type test, operating experience, analysis, or a combination of these methods. 46

associated

3.11N.3 Qualification Program Results

Qualification program results are contained in the various EQDP's. ~~submitted to the NRC for review as the qualification program progresses. As each EQDP is accepted by the NRC (issuance of an SER); the approved EQDP will become part of Supplement 2 to WCAP-8587.~~

These detailed results ~~will~~ also appear in the applicant's 10 CFR 50.49 submittal.

3.11N.4 Loss of Ventilation

Refer to Section 3.11.4.

3.11N.5 Estimated Chemical and Radiation Environment

The radiation and chemical environments for which the NSSS scope equipment is qualified are defined in the performance specification of the applicable EQDP contained in Supplement 1, WCAP-8587.

3.11N.6 ~~Equipment~~ Environmental Qualification of Mechanical Equipment

Insert → D

mechanical equipment qualification program

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INSERT D

Safety-related active mechanical equipment is designed with a high degree of environmental performance capability, however environmental qualification of this equipment must be considered due to the unavoidable use of nonmetallic components. Within the NSSS scope of supply, this ~~equipment~~ is limited to active pumps and valves and their associated motors and motor operators.

The motors and motor operators are qualified under WCAP-8587 as discussed in Section 3.11N.2. Qualification of the pumps and valves is addressed by a plant-specific material qualification review which identifies the nonmetallic components critical to the operation of this equipment, their application, environmental capabilities and applicable environmental conditions. Each active pump and valve is individually assessed and conclusions are drawn regarding the acceptability of ~~their~~ qualification. This information is presented in a Mechanical Equipment Qualification Report. A program addressing the operability of active pumps and valves has also been implemented and is described in Section 3.9.3.2.1. Equipment operating requirements are specified by the operability requirements listed in the motor/motor operator EQDP's.

Table 3.11N-1

~~To be provided later by the applicant's 10 CFR 50.49 submittal.~~

This table has been deleted.