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SHOREHAM NUCLEAR POWER STATION
P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

March 17, 1981 SNRC-545

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SER REVIEW
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Dear Mr. Denton:

The enclosed information reflects the understandings we have reached with members of your staff addressing their concerns related to the review of the Shoreham docket. This information will be formally incorporated into the FSAR at a later date.

Very truly yours,

for B R McCaffrey
J.P. Novarro
Project Manager
Shoreham Nuclear Power Station

RAH:js
attachments

cc: J. Higgins

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ATTACHMENTS TO SNRC-545

MARCH 17, 1981

1. Response to ETSB - R.G. 1.140
2. Response to HGEB - Wave Forces on Intake Structure
3. Response to ICSB-6 - MSIV LCS
4. Response to ICSB-8 - Startrec
5. Response to MTEB-7 - Jet Pumps Hold Down Beams
6. Response to PTRB - SRV Startup Test
7. Response to SEB-3 - Masonry Walls

ETSB -- R.G. 1.140 - NORMAL VENTILATION SYSTEMS

Shoreham has committed to perform testing and maintenance on the normal ventilation system HEPA filters and charcoal absorbers in accordance with the requirements of Regulatory Guideline 1.140, Rev. 1, except for limited access clearance to the HEPA filters due to the existing design configuration.

HGEB -- WAVE FORCES - INTAKE STRUCTURE (SCREENWELL)

The Shoreham Intake Structure is designed for hydrodynamic forces due to hurricane flooding (still water level) and wave action, as provided in SNRC-465, dated 2/29/80.

For wave action impacting the north face a Still Water Level of 25.5 feet (MLW) and a 10 foot breaking wave are assumed. A dynamic wave force of 55.4 Kip/foot and a static force of 84.9 Kip/foot are calculated. Thus, the maximum calculated force and moment on the structure are 140.3 Kip/foot and 4,036 Kip-foot/foot, respectively. The structure is designed to withstand these loads.

ICSB-6 -- MSIV LCS

The original General Electric design for the control logic for the Main Steam Isolation Valve Leakage Control System (MSIV LCS) utilized one relay(K-4) with two contacts for control of the main steamline LCS inboard and outboard process valves. Several years ago, it was discovered that a postulated single failure of this relay could have caused an opening of both the inboard and outboard MSIV LCS process valves, thus rendering both systems inoperable. A design change has since been incorporated involving the use of separate relays (K4 and K14) to separately control the outboard and inboard process valves to preclude the unacceptable effects of a postulated single failure. This design change has been implemented at Shoreham.

ICSB-8 -- STARTREC

The isolation network which separates the Shoreham Startrec system from the reactor safety systems is manufactured by Validyne. These isolators provide electrical-to-electrical isolation and are identical to those that have been fully qualified for use at the Zimmer and LaSalle power stations.

MTEB-7 -- JET PUMP HOLD DOWN BEAM CRACKING

General Electric has recommended to Lilco a reduction in the preload force of jet pump hold down beams to 25,000 pounds at Shoreham. An instruction to make this modification is scheduled to be issued in April 1981.

The Shoreham Project has committed to reduce hold down beam preload as recommended by GE. It is estimated that this work will be completed at the site by October 1981.

PTRB -- SAFETY RELIEF VALVE STARTUP TEST

The Shoreham FSAR states that "no individual relief valve may have a corrected flow rate that is less than 90 percent or greater than 122.5 percent of its expected flow rate." (See FSAR page 14.1-87 at paragraph 4.) A test is performed to provide assurance of SRV functionability and demonstration of acceptable operation between 90 and 122.5% rated SRV flow capability.

The 90 percent lower limit is established to assure that lower capacity valves will not have a significant effect on the magnitude of pressurization transients, thus assuring the conservatism of the overpressure protection analysis reported in FSAR section 5A. Also no more than 25 percent of the installed relief valves may have individual corrected flow rates in the range of 90 to 100 percent. The upper limit of 122.5% is established as a result of the upper bounding limits of the expected plant duty cycles.

SEB-3 MASONRY WALLS TO SUPPORT CATEGORY I EQUIPMENT

NRC correspondence dated April 21, 1980, request information on the use of Category I masonry walls within plants currently under construction permit or operating license review. The following items are in response to these inquiries.

Item 1 Are there any concrete masonry walls used in any of the Category I structures of your plant?

Response: The Shoreham Nuclear Power Station has utilized concrete masonry walls within Cateogry I structures.

Item 2 Indicate the loads and load combinations to which the walls were designed to resist. If load factors other than one (1) have been employed, please indicate their magnitudes.

Response: Loads and load combinations utilized in the design of concrete masonry walls are described in detail in Section 3.8 of the Shoreham FSAR. Concrete masonry wall design has followed the working strength method, thus load factors have not been used.

Item 3 In addition to complying with the applicable requirements of the SRP Sections 3.5, 3.7, and 3.8, is there any other code, such as the "Uniform Building Code" or the "Building Code Requirements for Concrete Masonry Structures" (proposed by the American Concrete Institute) which was or is being used to guide the design of these walls? Please identify and discuss any exceptions or deviations from the SRP requirements for the aforementioned codes.

Response: In addition to the referenced sections of the standard review plan, and as noted in Section 3.8.4.2 of the Shoreham FSAR, the New York State Building Construction Code applicable to general building construction, has been utilized. Additionally, the "Masonry Design Manual" published by the Masonry Industry Advancement Committee, Second Edition 1973, and the "Specification for the Design and Construction of Load-Bearing Concrete Masonry", published by the National Concrete Masonry Association, 1968 have been used as a general design guide.

Item 4 Indicate the method that you used to calculate the dynamic forces in masonry walls due to earthquake, i.e., whether it is a code's method such as Uniform Building Code, or a dynamic analysis. Identify the code and its effective date if the code method has been used. Indicate the input motion if a dynamic analysis has been performed.

Response: Seismic forces have been accounted for in the design of concrete masonry walls for the Shoreham Nuclear Power Station. Seismic forces have been developed by multiplying individual wall weights by the appropriate acceleration coefficients from the Building Response Spectra. Seismic forces have been applied statically to all concrete masonry walls.

Item 5 How were the masonry walls and the piping/equipment supports attached to them designed? Provide enough numerical examples including details of reinforcements and attachments to illustrate the methods and procedures used to analyze and design the walls and the anchors needed for supporting piping/equipment (as applicable).

Response: Concrete masonry walls have been used primarily to provide barriers for shielding, fire protection, and personnel separation. Masonry walls utilized in the construction of Seismic Class I structures are not designed, nor intended to act as bearing walls or for transmitting building shear forces. Concrete masonry walls have been designed as simply supported, either one-way span or two-way span wall systems. Wall reactions have been developed by providing positive anchorage at wall interfaces between adjacent concrete surfaces or structural steel framing. Internal to the wall, a system of bond beams and prefabricated truss-type reinforcement have been provided. An example of a concrete masonry wall design is attached to illustrate the design procedure utilized for the Shoreham Nuclear Power Station. Wall reinforcement and anchorage details are provided on the attached drawings as listed under Item 6.

Attachment of supports to hollow masonry walls is accomplished by utilizing toggle bolts. Attached is a design example of an attachment to a masonry wall utilizing toggle bolts.

In general, attachments to concrete masonry walls have been limited to the support of items not exceeding 50 lbs. in weight. Where attachment loads exceed 50 lbs., individual review and approval has been provided on a case by case basis. However, to verify the structural integrity of the Category I block walls, an "as-built" design verification will be conducted. The design verification will include the development of an "as-built" load plan for each wall and a reanalysis of each wall based on all "as-built" loads.

Item 6 Provide plan and elevation views of the plant structures showing the location of all masonry walls for your facility.

Response: The following drawings have been provided to show plans and elevations of masonry walls within the plant:

Drawing No.	Drawing Title
11600.02-FM-1A	Mach. Loc. Reactor Building
11600.02-FM-1B	Mach. Loc. Reactor Building
11600.02-FM-1C	Mach. Loc. Reactor Building
11600.02-FM-1D	Mach. Loc. Reactor Building
11600.02-FA-5D	Reactor Bldg. Elevator Enclosure
11600.02-FA-8B	Control Rm. & Dies. Gen. Rm. Misc. Det.
11600.02-FA-8C	Control Rm. & Dies. Gen. Rm. Misc. Det.
11600.02-FA-10L	Control Rm. & Diesel Gen. Rm.
11600.02-FA-20A	Seismic & Shieldirg Masonry - Reactor Bldg.
11600.02-FA-20B	Seismic & Shielding Masonry - Reactor Bldg.
11600.02-FA-20F	Masonry Walls - Control Bldg.
11600.02-FA-20G	Masonry Walls - Control Bldg.
11600.02-FA-20J	Masonry Walls - Control Bldg.
11600.02-FA-20K	Masonry Walls - Control Bldg.