UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FEB 5 1980

Docket No.: 50-382

Mr. D. L. Aswell
Vice President Power Production
142 Delaronde Street
New Orleans, La. 70174

Dear Mr. Aswell:

SUBJECT: RADIOLOGICAL SAFETY REVIEW - WATERFORD UNIT NO. 3

During our meeting here in Bethesda on October 31, 1979, we noted that a NUREG report on environmental qualification of safety-related electrical equipment would be issued soon. You requested that we send you a copy when it became available. That report, NUREG-0588 has now been issued for comment and you were mailed copies on January 9, 1980.

We have also briefly reviewed the adequacy of your response to our Question 211.2 concerning low temperature overpressure protection. The results of our initial review are given in Enclosure 1. This enclosure is not a formal request for additional information but is intended to provide guidance for you when you revise your response to Q211.2.

Our review of the material you have provided regarding meteorology measurements and data availability at Waterford is acceptable in accordance with existing Standard Review Plan requirements, and we have no additional questions. However, new requirements for meteorological monitoring and data accessibility are expected to be forthcoming before the end of 1980. These meteorological requirements, which are an outgrowth of Three Mile Island experience, may include:

1. Backup meteorological systems or methods for acquisition of meteorological data during periods when the primary (Regulatory Guide 1.23, "Onsite Meteorological Programs") system is out of service.

2. Remote (away from site) meteorological data interrogation capability.

3. Meteorological equipment connected to a vital power system.

4. Demonstration of a capability to provide reasonable site-specific transport and diffusion estimates of gaseous effluent. This capability

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should be effective to at least a distance of 10 miles, for emergency action levels identified in NUREG-0610, "Draft Emergency Action Level Guidelines for Nuclear Power Plants," September 1979.

Although the above items are not yet formal regulatory requirements, we suggest that you begin to consider how they can best be incorporated into your design so that they will not become pacing items in the licensing process if they do become required.

As a result of our continuing review in the areas of hydrology and quality assurance, we have developed the enclosed requests for additional information in each of these areas (Enclosures 2 and 3).

Mr. Roy Prados of your staff noted recently that you had not received certain letters that are referred to in our December 21, 1979 letter concerning environmental monitoring for direct radiation. The missing letters are dated July 26, 1978 and November 16, 1978.

The July letter, which transmitted proposed Appendix I model Technical Specifications, was sent to applicants having operating license applications under review at the time. The November letter was sent to essentially the same applicants as those who received the July letter. The November letter transmitted Revision 1 of NUREG-0472, which updated the model Technical Specifications sent in July. Neither of those two letters was or is applicable to Waterford because NUREG-0472 has been further revised.

I am sorry for the confusion that the reference to the July 1978 and November 1978 letters has produced. However, I believe that the January 1, 1980 Revision 2 of NUREG-0472, three copies of which were hand-delivered to Mr. Prados, together with the November 1979 Revision 1 of the Branch Technical Position sent to you with our December 21, 1979 letter, will provide adequate information for your use in developing complete Technical Specifications for Waterford.

Sincerely,

Robert L. Baer

Robert L. Baer, Chief
Light Water Reactors Branch No. 2
Division of Project Management

Enclosures:
As stated

cc: See next page

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ENCLOSURE 1
REVIEW OF RESPONSE TO Q.11.2

1. The applicant states that the interlocks and instrumentation associated with the shutdown cooling system (SDCS) suction isolation valves satisfy the appropriate portions of IEEE 279-1971. The applicant should identify each appropriate portion of IEEE Std. 279 and indicate how the Waterford design complies with it.

2. The applicant should provide or cross reference the appropriate logic diagrams and wiring diagrams to support his statement in Section 7.6.1.1.

3. The failure mode analysis should be provided for the shutdown cooling system isolation valves and interlocks. These valves must remain open to provide overpressurization protection at low temperatures but should close when the RCS pressure is above the shutdown cooling system pressure. No single failure should prevent the valve opening and no single failure should prevent the isolation function.

The following review guidelines should be used in establishing the acceptability of the design.

1. Current licensing criteria that governs the subject safety concerns are GDC 34-Residual Heat Removal; GDC 55-Reactor Coolant Pressure Boundary Penetrating Containment; Branch Technical Position RSB 5-1, Design Requirement of the Residual Heat Removal System; and Branch Technical Position ICSB-3, Isolation of Low Pressure System from the High Pressure Reactor Coolant System. Additional review guidelines are included in Sections 5.4.7 and 7.4 of the NRC Standard Review Plan.

2. The review includes the evaluation of electrical components (motor operated valve controls, interlocks, sensors for interlocks, position indicators, power sources, and associated cables). Therefore, a detailed drawing review must be performed.

3. The review establishes that:

   (1) The sensors for the interlocks are suitably independent and diverse.

   (2) A trip signal closes the motor operated valves when the pressure is too high.

   (3) The interlocks prevent the motor-operated valves from opening unless the pressure is below the shutdown cooling system design pressure.

   (4) The valves are powered from redundant power sources.

   (5) The AC and DC power source for the interlock associated with each valve, associated interlock, controls, position indication and motor is supplied from the same Class I division.

   (6) The associated redundant control power, instrument, and interlock cable are separated by a three hour fire barrier or equivalent.

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ENCLOSURE 2

REQUEST FOR ADDITIONAL INFORMATION

HYDROLOGIC ENGINEERING

371.11 (2.4.2.3) Also see your response to Question 371.06 and Subsection 2.4.2.3, Amendment No. 5. In our question 371.06, we stated a position that the design basis event, for determining the flooding potential of the Nuclear Plant Island Structure (NPIS), should be the Standard Project Storm (SPS) coincident with an OBE. In your response you stated that to prevent failure of the sump pumps during an OBE, seismically qualified pumps and piping will be used, thus the PMP with pumps operating is sufficient as the design basis event and envelopes the case of the SPS coincident with an OBE. However, in Section 2.4.2.2 you state that the SPS with pumps not working is a more critical event than the PMP with pumps working.

Clarify this apparent contradiction by providing, as a minimum, the following information:

a) In the PMP analysis of cooling tower Area "A", the open area stated in Amendment 1 is 6800 square feet. It appears from Figure 2.4-8 that this is about 8700 square feet. Revise your analysis using this larger area or provide justification for using the smaller 6800 square foot area. Provide assurances that all other contributing drainage areas are correct as shown in Subsection 2.4.2.3 and that no credit was given to roof drains in computing a parapet roof storage capacity of 1135 cubic feet. (Refer to item 371.13C)

b) You state that water will pond to a maximum depth of 0.9 feet in Cooling Tower Area "A" and 1.7 feet in Cooling Tower Area "B". Furthermore, you state that all safety related equipment in cooling tower areas A and B,

is located above flood level. Describe the location of all safety-related equipment in the flooded areas with respect to the flood levels in the cooling tower areas.

371.12 (2.4.3.2) Your response to Question 371.10 did not justify your assumption that upstream flood control and levee failures will preclude the existence of a 30-foot stage at Waterford. It is our position that the instantaneous levee failure with the full river, 30 ft. MSL stage, is the most critical river flood condition and is to be considered one of the design basis floods. Documentation should be furnished to provide assurance that all safety-related facilities are protected from the resulting flood, runup, splash, static and dynamic forces. The reference used and the procedures utilized in the determinations of the flood wave runup, splash, static and dynamic forces for the safety-related structures should be documented in the appropriate section of the FSAR.

371.13 (2.4.5.10) Also see your response to Question 371.08 and Subsections 2.4.5.5 and 2.4.10, Amendment No. 5. The summarized hydrologic design criteria of HPIS safety-related facilities presented in Subsection 2.4.5.5, and 2.4.10., Amendment No. 5, "Flood Protection Requirements" should be more complete.

a. For each hydrologic design condition, provide the critical water level, wave height, wave effects (e.g., runup and splash) and forces (i.e., static and dynamic). Include the 30 ft. MSL river stage levee failure.

b. Provide assurance that the critical forces from 371.13a have been used in the appropriate load combinations of Section 3.8.

c. Roof loads criteria and design. Provide assurance that all roofs of the safety-related buildings are so designed as to safely store or dispose of the local PMP. Accordingly, provide expected roof ponding levels for each safety related structure and describe the number, size, and location of all related design features such as scuppers, drains and parapet wall heights. Document that the intensity and duration of the PMP is conservative with respect to ponding and discharge capacity. Discharge through standard slotted or screened drains should not be considered in determining ponding levels because these often become clogged with debris.

371.14 Equation 13 in Subsection 2.4.3.7 appears to be incorrect. We believe the correct form of the equation should be

$$\frac{X}{t\sqrt{gy_o}} + 2 - \frac{V_o}{\sqrt{gy_o}} = 3\sqrt{y/y_o}$$

Please verify this equation and assure that the correct equation was used in your actual computations and estimates.

371.15 As required in Supplement No. 1, dated June 1, 1973, to the Construction Permit Safety Evaluation Report (SER), provide additional data to demonstrate that the predictive model used to design the Essential Cooling Water System is validated by using actual performance data from existing cooling towers of comparable size and type, operating under a range of severe heat loads and environmental conditions. If performance data are not available from other sources, provide a detailed

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discussion and test procedure for a preoperational testing program to validate your model and to show that the design basis heat rejection capabilities and evaporative and drift water losses are conservative.

ENCLOSURE 3

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REQUEST FOR ADDITIONAL INFORMATION

421.0 QUALITY ASSURANCE BRANCH

421.28 (17.2.1) Figure 17.2-1 and page 17.2-3 indicate that the QC Engineer reports to the Assistant Station Superintendent with a communication link to the QA Manager. Page 17.2-5, paragraph 17.2.1.2.3, states that the QA Manager and QC Engineers/Technicians are independent of undue influence and responsibilities for production schedules or costs. The reporting responsibility of the QA Manager is acceptable; however, the reporting responsibility of the QC Engineers/Technicians needs further justification. Please clarify or further explain whether the Assistant Station Superintendent, to whom the QC Engineers/Technicians report, is sufficiently free from undue influences and responsibilities from schedules and costs in accordance with the provisions of Criterion I of Appendix B to 10 CFR Part 50.

421.29 Please correct the following typographical errors or inadvertent omissions:

a. Page 17.2-18, Section 17.2.4.1 lists a 3/78 date for Regulatory Guide 1.33. This date should be 2/78.

b. Page 17.2-36, Section 17.2.13 does not reference the applicable regulatory guide.

c. Page 17.2-50 - The description for QP4.7 and 4.8 should identify the QP numbers where additional controls exist.

421.30 (17.2.2) The response to Q421.3 does not clearly describe whether the QA program for fire protection is under the management control of the QA organization. Therefore, provide a description to assure that the QA program for fire protection is under the management control of the QA organization. This control consists of (1) formulating and/or verifying that the fire protection QA program incorporates suitable requirements and is acceptable to the management responsible for fire protection and (2) verifying the effectiveness of the QA program for fire protection through review, surveillance, and audits. Performance of other QA program functions for meeting the fire protection program requirements may be performed by personnel outside of the QA organization.

421.31 (17.2.2) The response to Q421.22 implies that your description applies to the preoperational testing phase instead of the operational phase. Please clarify your response to include provisions which assure that, during the operational phase, program procedures provide criteria for determining the accuracy requirements of test equipment and criteria for determining where a test is required or how and when testing activities are performed.

421.32 (17.2.10) Describe the criteria for determining the accuracy requirements of inspection equipment and criteria for determining when inspections are required. Describe those provisions which assure that your QA program will include how these criteria will be used.

421.33 The responses to 421 series of NRC questions appear to be separated from 17.2 of the FSAR. Incorporate or reference all responses to these questions in Section 17.2 of the FSAR to provide a fully integrated QA program description.