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SUBJECT: Forwards response to RAI re seismic qualification of mechanical & electrical equipment per GL 87-02, "Verification of Seismic Adequacy of Mechanical & Electrical Equipment in Operating Reactors USI A-46."

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Carolina Power & Light Company
Robinson Nuclear Plant
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Hartsville SC 29550

Robinson File No.: 13510
Serial: RNP-RA/95-0193

OCT 30 1995

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
SEISMIC QUALIFICATION OF MECHANICAL AND ELECTRICAL EQUIPMENT

Gentlemen:

By letter dated June 30, 1995, Carolina Power & Light (CP&L) Company submitted a summary report for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 in response to Generic Letter 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, USI A-46." The NRC review of this submittal generated the need for additional information, which was discussed in a telephone conference call with the NRC and our staff on September 26, 1995. By letter dated September 29, 1995, the NRC requested this information within 30 days. Accordingly, the enclosed response is due to be provided by October 30, 1995.

Questions regarding this matter may be referred to me at (803) 857-1802.

Very truly yours,

R. M. Krich
Manager - Regulatory Affairs

JSK/klb
Enclosure
c: Mr. S. D. Ebneter, Regional Administrator, USNRC, Region II
Ms. B. L. Mozafari, USNRC Project Manager, HBRSEP
Mr. W. T. Orders, USNRC Senior Resident Inspector, HBRSEP

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO SEISMIC QUALIFICATION OF MECHANICAL AND ELECTRICAL EQUIPMENT

Information Request 1

"You have indicated your intent to use the volume control tank, condensate storage tank and the refueling water storage tank as cooling sources. Indicate whether these are the only sources (seismic or non-seismic). List the volumes of these tanks, the expected cooling duration, and whether they are seismically qualified."

Response

The Unresolved Safety Issue (USI) A-46 process for decay heat removal involves utilization of the Auxiliary Feedwater (AFW) motor-driven pumps to provide feedwater to the Steam Generators (SGs), and the SG Safety Relief Valves (SRVs) for removal of decay heat, with Service Water (SW) providing the source of water for the AFW pumps following Condensate Storage Tank (CST) depletion. Design basis CST depletion time is two hours.

Cooldown for long-term decay heat removal is accomplished by manual steam dump using the Main Steam Isolation Valve (MSIV) upper and lower seat drain valves and by placing Residual Heat Removal (RHR) in service using Component Cooling Water (CCW) as the cooling medium. If secondary side heat removal is not feasible, then bleed and feed cooling of the Reactor Coolant System (RCS) can also be used for long-term decay heat removal.

RCS inventory control is provided by supplying water from the Volume Control Tank (VCT) and Refueling Water Storage Tank (RWST). If feed and bleed cooling is required, the minimum expected time before initiating containment sump recirculation is 81 minutes.

Other cooling sources are available that are not seismically qualified, such as the fire water system, but were not credited in the submittal.

The volume of the VCT is 2,244 gallons. An automatic makeup system maintains the inventory between 905 and 1,010 gallons. Volume is made up from two Boric Acid Storage Tanks (BASTs) with a combined volume of 15,000 gallons.

The volume of the CST is 190,000 gallons, and in practice, 135,000 gallons are usually available.

The volume of the RWST is 350,000 gallons with a Technical Specifications (TS) required minimum volume of 300,000 gallons.

Based on decay heat removal by SG SRVs and feeding the SGs by one AFW pump, the CST will empty before 72 hours. Based on the average inventory of 135,000 gallons and the Reactor Coolant Pumps (RCPs) tripped, the CST will last at least 12 hours. At that time, three options then become available as discussed below.

1. Hot shutdown can be maintained by aligning the SW header to the AFW pump suction. This method can also be used to achieve cold shutdown.

2. Cooldown by manual steam dump using the MSIV upper and lower seat drain valves and placement of RHR in service using CCW for cooling.

3. Feed and bleed cooling of the RCS with decay heat removal is accomplished by releasing steam through the pressurizer Power Operated Relief Valves (PORVs). RCS inventory control is maintained by injecting water from the RWST via the Safety Injection (SI) pumps when pressure is below 1,500 psi. This will result in RWST depletion in 5.7 hours with no Containment Spray (CS) pumps running, and 81 minutes with both CS pumps running.

The tanks discussed above are seismically qualified.

Information Request 2

"Provide a listing of established and tested procedures for all of the methods and paths for cooling stated in the submittal."

Response

The Safe Shutdown Equipment List (SSEL) was developed using established and tested procedures. No new procedures were written to accommodate the SSEL. The SSEL was reviewed and approved by the HBRSEP, Unit No. 2 Operations Unit for consistency with normal and emergency operating procedures. The following procedures requiring significant operator actions were credited.

Procedure	Operator Action
Functional Restoration Procedure (FRP) - S.1, "Response to Nuclear Power Generation/ATWS"	Emergency Boration
FRP - H.1, "Response to Loss of Secondary Heat Sink"	Feed and Bleed Cooling
End Path Procedure (EPP) - 005, "Natural Circulation Cooldown"	RCS Cooldown (non-Loss of Coolant Accident (LOCA))
EPP - 008, "Post LOCA Cooldown and Depressurization"	RCS Cooldown (LOCA)
EPP Foldout A	Swap Over of AFW Source
EPP - 009, "Transfer to Cold Leg Recirculation"	Recirculation Swap Over
Abnormal Operating Procedure - 017, "Loss of Instrument Air"	Manual Steam Dump

Information Request 3

"Indicate whether all the equipment listed in the safe-shutdown equipment list (SSEL) is seismically qualified. If not, identify specifically the portions of the indicated cooling sources that are seismically qualified."

Response

Certain equipment items included on the SSEL are not classified as Seismic Class I, as described in the Updated Final Safety Analysis Report. However, pending resolution of outlier conditions as discussed in the USI A-46 Seismic Evaluation Report submitted to the NRC by letter dated June 30, 1995, the seismic adequacy of these items has been verified.