



Carolina Power & Light Company

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

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62  
ADDITIONAL INFORMATION REGARDING SERVICE WATER PUMP SEISMIC QUALIFICATION

Gentlemen:

The purpose of this letter is to provide information requested by the NRC staff during a telephone conference call on August 17, 1992, concerning service water pump seismic qualification issues. The staff questions relate to Carolina Power & Light Company's July 16, 1992 submittal (Serial Number NLS-92-136) for the Brunswick Steam Electric Plant, Units 1 and 2.

Please refer any questions regarding this submittal to Mr. M. R. Oates at (919) 546-6063.

Yours very truly,

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Enclosure

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## ENCLOSURE 1

### BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 NRC DOCKET NOS. 50-325 & 50-324 OPERATING LICENSE NOS. DPR-71 & DPR-62 SW PUMP SEISMIC QUALIFICATION INFORMATION

#### NRC QUESTION 1:

Provide a description of your service water pump maintenance program(s).

#### CP&L RESPONSE:

The maintenance and testing activities associated with the service water pumps and motors are listed in Table 1. Also listed are the preventive maintenance procedures for the pump intake bays and traveling screens, since these procedures have an impact on pump performance. In addition to the procedures listed in Table 1, the auxiliary operators perform daily rounds and record data, as specified in Operating Instruction (OI)-3.4, Daily Check Sheets - Auxiliary Operator Daily Rounds.

The changes being implemented to minimize service water pump maintenance are upgrades to pump materials, conversion to product-lubrication for the pumps, and upgrade of the motor thrust bearings. The pump materials are being upgraded to enhance long-term corrosion resistance. In particular, replacement of carbon steel fasteners with Monel and the carbon steel pump base plates with a stainless steel material will reduce maintenance due to corrosion.

The conversion to product-lubrication for the pump bearings and the thrust bearing upgrade will allow the service water lube water system to be removed from service. This system has a great deal of corrective maintenance. The cyclone separators, which filter the lube water prior to each service water pump, have been susceptible to clogging, requiring maintenance involvement to rod out the separators. The service water lube water pressure relief valves (PRVs), which reduce lube water pressure before it enters the cooling coils, also have been corrective maintenance items. Malfunction of the PRVs can result in higher flows and higher velocities in the cooling coils, causing increased wear of the coils and fittings. Removal of the service water lube water system will eliminate these concerns.

#### NRC QUESTION 2:

Provide the short term qualification criteria being used for the service water pumps.

#### CP&L RESPONSE:

The short-term qualification criteria being used for the service water pumps are contained in the Nuclear Engineering Department (NED) Design Guide DG-II.20 (Revision 2). This design guide, along with a discussion of the acceptance criteria, were previously submitted to the NRC by letter dated April 15, 1992 (Serial Number NLS-92-118). The short-term qualification criteria used are

3 percent damping for the design basis earthquake (DBE) and allowable stresses of 90 percent of the minimum material yield stresses. More detailed information is contained in the Design Guide and in the specific pump stress analysis performed for CP&L by McDonald Engineering Analysis, Inc. The pump stress report has been received by CP&L and is currently undergoing review to verify the results.

#### NRC QUESTION 3:

Summarize the results of engineering analyses being performed for the service water system (including lines less than 1-1/2 inch).

#### CP&L RESPONSE:

The only remaining stress work activity associated with the service water pumps is the analysis of the pump discharge piping lines. These lines are currently being analyzed by the Brunswick Design Turnover Project (DTOP) group. The service water system is the last large bore system required to be analyzed under the IE Bulletin 79-14 Program. Piping stiffnesses developed during the IE Bulletin 79-14 Program have been included in the service water pump stress report. Any support modifications required as a result of these analyses will be implemented following the final piping stress analyses.

The service water lube water system, from the main service water headers to the service water pumps, has been analyzed. Qualified piping supports have been designed using the final analyzed loads and are currently being installed. The service water lube water lines, which carries lube water down the pump column to the suction bell bearings, are supported from the pump column flanges and have been analyzed as part of the Service Water Pump Stress Report. The resultant stresses in these 1/2-inch lines have been shown by these analyses to be within the material allowables.

TABLE 1

## SERVICE WATER PUMP MAINTENANCE ACTIVITIES

PROCEDURE	TITLE/DESCRIPTION	FREQUENCY
ENP-2706	Service Water Pump Motor Log	Quarterly
ENP-2702.1	Infrared Thermography Predictive Maintenance	Annual
OPDM-MEC-514	Vibration Data Collection--Pump Vibration Trending	28 Days
OPM-LUB-500	Plant Equipment Lubrication Schedule--Motor Oil Sample Inspection	Annual
OPM-M509	Visual Inspection of Electric Motors--Inspect and Clean Motor Air Passages	Annual
OPM-M511	Service Water Pump Motor Shaft Inspection	Refueling
OPM-STU-500	Service Water Intake Structure Inspection and Cleaning	Refueling
OSPP-RTD-004	Inspection of Service Water Pump Motor RTDs	Annual
PPX-503	Backflush Motor Oil Cooler	Annual
PT-24.1-1	U1 Service Water Pump & Discharge Valve Operability Test--Satisfy Section XI requirements	Quarterly
PT-24.1-2	U2 Service Water Pump & Discharge Valve Operability Test--Satisfy Section XI requirements	Quarterly
OI-3.4	Daily Check Sheets--Auxiliary Operator Daily Rounds	Daily and per shift