



Carolina Power & Light Company

SERIAL: NLS-85-009

JAN 22 1985

Director of Nuclear Reactor Regulation
Attention: Mr. D. B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62
EMERGENCY RESPONSE CAPABILITY
CONFORMANCE TO REGULATORY GUIDE 1.97, REVISION 2

Dear Mr. Vassallo:

By letter dated November 23, 1984, your staff provided Carolina Power & Light Company (CP&L) with a copy of the report prepared by EG&G Idaho, Inc. regarding conformance to Regulatory Guide 1.97 at Brunswick. This report contained six Regulatory Guide 1.97 items for which additional information was required.

Enclosed please find our responses to these items. In addition, clarifications pertaining to the Brunswick Position Paper on Regulatory Guide 1.97 and the Brunswick Steam Electric Plant Unit Nos. 1 and 2, Response to NUREG-0737 Supplement 1 - Regulatory Guide 1.97 - Application to Emergency response facilities are included. Should you have any questions concerning this submittal, please contact Mr. John S. Dietrich at (919) 836-6154.

Yours very truly,

S. E. Zimmerman
Manager

Nuclear Licensing Section

MAT/pgp (1033MAT)

cc: Mr. D. O. Myers (NRC-BNP)
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ENCLOSURE 1
TO SERIAL NLS-85-009

Open Item 1

Neutron Flux - the licensee's present instrumentation is acceptable on an interim basis until Category 1 instrumentation is developed and installed.

BSEP Response

The Company will keep informed of new developments in neutron monitoring instrumentation.

Open Item 2

Drywell Sump Level - the licensee should provide information describing how the level of the drywell sump is ascertained during and following an accident.

BSEP Response

Brunswick has a BWR Mark I drywell with two drain sumps. The equipment drain sump collects identified leakage and the floor drain sump collects unidentified leakage. Although the level of the drain sumps could be used as a direct indication of a breach of the reactor coolant system pressure boundary, the indication would be ambiguous because of water collection in the sumps during normal operation.

The drywell-sump level signals do not automatically initiate safety-related systems or alert the operator of the need to take safety-related actions. Both sumps have level detectors that provide only the following non-safety indications:

1. Rate of rise of indication
2. High-level alarm (starts first sump pump)
3. High-high-level alarm (starts second sump pump)

In addition, timers are used to indicate the duration of sump-pump operation and permit the amount of leakage to be estimated. Excessive leakage during normal operation requires the unit to be shut down per technical specifications.

With regard to determining the levels of the drywell sumps during and following an accident, the systems are deliberately isolated at the primary containment penetration upon receipt of an isolation signal to establish containment integrity. The drywell sumps overflow to the suppression pool. Therefore, by design, the drywell sump-level instrumentation serves no useful accident-monitoring function. There is other instrumentation required by R.G. 1.97 which would indicate leakage into the drywell.

1. Drywell pressure - Variable B7, Category 1
2. Drywell temperature - Variable D7, Category 2
3. Primary containment area radiation - Variable C5, Category 3

Brunswick has identified drywell pressure and drywell temperature as Type A variables.

The Emergency Procedure Guidelines use the RPV level and the drywell pressure as entry conditions for the Level Control Guideline. A small line break will cause the drywell pressure to increase before a noticeable increase in sump level. Therefore, the drywell sumps will provide a "lagging" versus "early" indication of a leak. Based on the above discussion, additional instrumentation to monitor drywell sump level during and following an accident is not required.

Open Item 3

Drywell drain sumps level - the licensee should provide information describing how the level of the drywell drain sumps are ascertained during and following an accident.

BSEP Response

Refer to BSEP Response for Open Item 2

Open Item 4

Standby liquid control system storage tank level - environmental qualification should be addressed in accordance with 10CFR50.49.

BSEP Response

The Standby Liquid Control System does not require environmental qualification per 10CFR50.49. Refer to Carolina Power & Light Company's Environmental Qualification of Electrical Equipment Brunswick Steam Electric Plant Units 1 and 2 10CFR50.49 - 90-Day Response Submittal to Commission on May 20, 1983.

Open Item 5

Reactor building or secondary containment area radiation - the licensee should identify the range of this instrumentation, identify any deviation from the range recommended by the regulatory guide and justify any deviation.

BSEP Response

In their review, EG&G Idaho, Inc. indicated that the reactor building vent closed when the radiation level reaches 5 mR/hr. Our May 8, 1984 submittal of Revision 2 of the Brunswick response to NUREG-0737 Supplement 1 - R.G. 1.97 - Application to Emergency Response Facilities revised this to reflect reactor building vent closure at 11 mR/hr (see Variable E2, page 59 of our May 8, 1984 submittal).

The Company believes that Secondary Containment Area Radiation is an inappropriate parameter to use in order to detect or assess primary containment leakage. Radiation exposure rate in the secondary containment is largely a function of the radioactivity in the primary containment and in the fluids flowing in the ECCS piping, which cause direct radiation shine on the area monitors. The Company is concerned about local radiation exposure rate

monitors providing ambiguous indications due to the amount of piping and the number of widely scattered locations of electrical penetration and hatches.

The existing area radiation monitoring system at Brunswick can be used to monitor area radiation in various areas of the reactor building. Various ranges are provided depending on the area being monitored. The ranges vary from 0.01 - 100 mR/hr to 10^3 - 10^6 mR/hr. Also, the Drywell High Range Radiation Monitors provide a range of 10^3 - 10^{10} mR/hr. The noble gas effluent monitors (Variables E4 and E5 as detailed in the BSEP Response to NUREG-0737, Supplement 1) will be used in conjunction with the existing area radiation monitors as alternate instrumentation to assess primary containment leakage.

Open Item 6

Radiation Exposure Rate - the licensee should provide instrumentation in accordance with the R.G. 1.97 recommendations.

BSEP Response

Radiation Exposure Rate is listed under two variable types in R.G. 1.97, Variables C14 and E3. We have found our reference to NUREG-0737, Supplement 1 to be inappropriate for Variable C14. The interpretation was confused with Radiation Exposure Meters. We offer the following resolution to Variable C14:

The purpose of this variable is to detect indication of a breach of primary containment. As discussed in the BSEP Response to Open Item 5, radiation exposure rate in the secondary containment is largely a function of the radioactivity in the primary containment and in the fluids flowing in the ECCS piping, which cause direct radiation shine on the area monitors. The noble gas effluent monitors should be used to properly detect a breach of containment. Using radiation exposure rate monitors to detect primary containment breach is neither feasible nor necessary. Noble gas effluent monitors will be used in conjunction with existing area radiation monitors to detect a breach of containment.

We provide the following resolution to Variable E3:

Should access to the reactor building be deemed necessary, existing area radiation monitors can be used as well as portable survey instrumentation.

Additional Clarifications

The following clarifications are to the Brunswick Position Paper on R.G. 1.97 and the Brunswick Response to NUREG-0737 Supplement 1.

1. Paragraph 1.5.g of the Brunswick Position Paper on Regulatory Guide 1.97

The Company's position concerning Paragraph 1.5.g of R.G. 1.97 was inadvertently omitted from Revision 1. CP&L concurs with this position.

2. Variable A2 (Brunswick Response to NUREG-0737 - Supplement 1) -
Reactor Water Level

The Company has stated that a range of minus 180 to plus 295 inches of water is recommended for RPV water level. Our original intent was to comply with the recommended low end range and monitor level down to the bottom of the core support plate. It was believed that a re-calibration to the existing fuel zone instrument would accomplish this so that the same instrument which is used for normal operations could also be used for post-accident. The re-calibration can be done, but will degrade the accuracy of the instrument. In light of this information, which came out of the detailed engineering of the modification, we questioned the necessity of monitoring water level to that low a level. The lowest useful level is minus 128 inches of water, as determined by calculations for formulation of the Brunswick EOP's for the steam cooling procedure. We believe a range of minus 150 to plus 295 inches of water meets the intent of this variable. A range of minus 150 to plus 295 inches will be provided for monitoring reactor water level.

3. Variable A7 (Brunswick Response to NUREG-0737 - Supplement 1) -
Suppression Pool Pressure

The Company has stated that a range of minus 5 to plus 245 psig is recommended for suppression pool pressure. Our original intent was to maintain consistency with the drywell pressure instrument range (minus 5 to plus 245 psig) because primary containment consists of the drywell and the suppression pool. However, efforts to utilize existing instrumentation found re-calibration of the existing suppression pool pressure instrument (from a range of zero to plus 75 psig to the expanded range) to render the instrument useless for normal operations. Additional instrumentation to monitor this wide range was considered undesirable from a human factors standpoint.

Drywell pressure is a good approximation of suppression pool pressure; in that a one-half pound differential of drywell pressure to suppression pool pressure (drywell pressure lower) results in the opening of the vacuum breakers, and a drywell pressure higher than suppression pool pressure is equalized through the downcomers. CP&L considers the wide range drywell pressure indication of minus 5 to plus 245 psig adequate for monitoring post-accident primary containment pressure. The present range of zero to plus 75 psig will be maintained for monitoring suppression pool pressure.

4. Variable D25 (Brunswick Response to NUREG-0737 - Supplement 1) -
Standby Instrument Air Pressure

The Nitrogen Backup is a subsystem of the Instrument Air System designed to provide an independent, safety-related pneumatic source to selected safety-related loads. This system will eliminate the need to environmentally qualify the components of the non-interruptible air system as per IEB 79-01B, since it will provide all safety grade pneumatic supply requirements. The other pneumatic loads currently

supplied by the non-interruptible instrument air system have been reviewed and either fail to the safe position following an accident or are being modified by other plant modifications (i.e., change out to solenoid valves).

5. Note 2 on page iii of Brunswick Response to NUREG-0737 Supplement 1

This note should read as follows:

See Brunswick position on R.G. 1.97, paragraph 1.3.1e for category 1 instruments and paragraph 1.3.2d for category 2 instruments.