June 15, 1984

Docket Nos. 50-325/324

DISTRIBUTION
Docket File
NRC PDR
Local PDR
ORB#2 Reading
DEisenhut
OELD
SNorris
MGrotenhuis
SMacKay
RHermann
ELJordan
JNGrace
ACRS (10)
Gray File

Mr. E. E. Utley
Executive Vice President
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

SUBJECT: VERIFY QUALIFICATION OF ACCUMULATORS ON ADS VALVES (II.K.3.28, MPA F-55)

Re: Brunswick Steam Electric Plant, Units 1 and 2

We have completed our review of your submittals dated January 17 and February 14, 1980, December 23, 1981 and July 5, 1983. Under our direction the technical contractor, Brookhaven National Laboratory (BNL), has reviewed the appropriate documentation with regard to MPA F-55 and prepared an evaluation. The NRC staff in concert with BNL established the acceptance criteria for this review. We have reviewed the BNL evaluation and concur with the conclusion reached by BNL, that the licensee has fulfilled the intent of TMI II.K.3.28, Verify Qualification of Accumulator on ADS Valves, by providing redundant, safety-related, pneumatic sources to actuate the ADS valves the required number of times for the period of time of 100 days following an accident.

We consider this action completed. The related Safety Evaluation is enclosed.

Sincerely,

Original signed by/

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:ORB#2
SNorris:ajs	MGrotenhuis	SMacKay	RHermann	DVassallo
06/11/84	06/13/84	06/ /84	06/15/84	06/15/84

Mr. E. E. Utley
Carolina Power & Light Company
Brunswick Steam Electric Plant, Units 1 and 2

cc:

Richard E. Jones, Esquire
Carolina Power & Light Company
336 Fayetteville Street
Raleigh, North Carolina 27602

George F. Trowbridge, Esquire
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

Mr. Charles R. Dietz
Plant Manager
Post Office Box 458
Southport, North Carolina 28461

Mr. Franky Thomas, Chairman
Board of Commissioners
Post Office Box 249
Bolivia, North Carolina 28422

Mrs. Chrys Baggett
State Clearinghouse
Budget and Management
116 West Jones Street
Raleigh, North Carolina 27603

U. S. Environmental Protection
Agency
Region IV Office
Regional Radiation Representative
345 Courtland Street, N. W.
Atlanta, Georgia 30308

Resident Inspector
U. S. Nuclear Regulatory Commission
Star Route 1
Post Office Box 208
Southport, North Carolina 28461

James P. O'Reilly
Regional Administrator
Region II Office
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Dayne H. Brown, Chief
Radiation Protection Branch
Division of Facility Services
Department of Human Resources
Post Office Box 12200
Raleigh, North Carolina 27605

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325/324

VERIFY QUALIFICATION OF ACCUMULATOR ON ADS VALVES

1.0 Background

Safety analysis reports claim that air or nitrogen accumlators for the automatic depressurization system (ADS) valves are provided with sufficient capacity to cycle the valves open five times at design pressures. GE has also stated that the emergency core cooling (ECC) systems are designed to withstand a hostile environment and still perform their function for 100 days following an accident. Licensees and applicants must demonstrate that the ADS valves, accumulators, and associated equipment and instrumentation meet the requirements specified in the plant's FSAR and are capable of performing their functions during and following exposure to hostile environments, taking no credit for non-safety-related equipment or instrumentation. Additionally, air (or nitrogen) leakage through valves must be accounted for in order to assure that enough inventory of compressed air is available to cycle the ADS valves. If this cannot be demonstrated, it must be shown that the accumulator design is still acceptable.

The commitment to satisy the requirement of II.K.3.28 for Brunswick Units 1 and 2, is discussed in the licenee's initial submittals dated dated January 17, 1980, February 14, 1980, and December 23, 1981, and their response to the Request for Additional Information dated July 5, 1983.

2.0 Discussion

At Brunswick, there are two seismically qualified air supply systems for the ADS. The normal supply is described as a non-interuptable instrument air supply from three main compressors. There are two divisions within this system, each feeding a 96 ft3 air receiver and half of the individual accumulators for each ADS valve. If the non-interruptible instrument air system pressure drops to 95 psig (as measured at the air receivers), the independent emergency standby compressors are started automatically and will maintain the system at a minimum of 95 psig. Each standby compressor is powered from the emergency buses which can receive power from the on-site diesel generators in case of loss of off-site power.

The ADS valves, accumulators, and the non-interruptible instrument air system (including the standby generators, the air receivers, and the required controls) are seismically qualified. Environmental qualification is being addressed in accordance with the schedule required by 10 CFR 50.49.

In addition, the instrument air supply of each unit can be cross connected and each can be supplied with nitrogen from the containment atmosphere dilution system.

Because of these redundancies, the licensee feels that the ability of the accumulators to maintain an air supply for any length of time is not critical.

3.0 Demonstration of Qualification

In the letter of July 5, 1983, the licensee states that the ADS valves are capable of cycling nine times at atmospheric pressure and three times at 70% of maximum calculated post LOCA drywell pressure using only the accumulator inventory. The FSAR (page 4.4.6) states that the accumulators are sized to contain sufficient air for a minimum of five valve actuations. There is no information given in either document regarding leakage, or margin included in the leakage criteria for accident or harsh environments. In answer to questions involving the length of time the accumulators are available to perform their function (taking leakage, harsh environments, and seismic events into account), the licensee states "...the automatic depressurization system is capable of performing its intended function idefinitely at atmospheric pressure of 70% of drywell pressure (based on reliability of the non-interruptible instrument air system)." The licensee further states that there is no periodic leak testing of the ADS accumulators. Periodic tests are performed on the non-interruptible instrument air system (each refueling outage). Each division of the system is isolated (compressors valved off) and the ability of the standby compressor to maintain a minimum of 95 psig in the receiver is verified.

The licensee states in his letter of July 5, 1983 that the automatic depressurization system and the non-interruptible instrument air system are class I seismic systems.

4.0 Evaluation

Although the accumulators are capable of cycling the ADS valves for a minimum of five times upon loss of air supply, they are used in this system as snubbers, and are not relied on to maintain pressure to the ADS valve actuators. Both the primary and standby supply systems and the entire ADS within the containment are seismically qualified and the standby compressors can be powered by on-site emergency power. The staff finds the licensee is aware of and has considered the requirement to environmentally qualify equipment important to safety.

The periodic testing of the standby system demonstrates that the ADS valves will always have 95 psig available even in the event of seismic event and loss of off-site power coincident with a pipe break accident. The staff finds this an acceptable solution for both the short-term and long-term requirements for ADS function.

5.0 Conclusion

Based on the evaluation given in Section 4.0 above, the staff finds that the licensee has met the intent of Multi-Plant Action F-55 (Verify Qualification

of Accumulator on ADS Valves), by demonstrating that the accumulators are not relied on as the sole source of pneumatic supply at any time, and that the standby compressor system will supply the required air pressure under postulated accident conditions.

Principal Contributor: R. Wright

Dated: June 15, 1984