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AUTH.NAME AUTHOR AFFILIATION
TUCKER,H.B. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
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DUKE POWER COMPANY
P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

April 17, 1989

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, 270 and 287
TAC Numbers: 68574, 68575 and 68576
10CFR50.63, Requirements for Station Blackout

Gentlemen:

On July 21, 1988, the Nuclear Regulatory Commission (NRC) amended its regulations in 10 C.F.R., Part 50. A new section, 50.63, was added which requires that each light-water-cooled nuclear power plant be able to withstand and recover from a station blackout (SBO) of a specified duration. Utilities are expected to have the baseline assumptions, analyses and related information used in their coping evaluation available for NRC review. It also identifies the factors that must be considered in specifying the station blackout duration. Section 50.63 requires that, for the station blackout duration, the plant be capable of maintaining core cooling and appropriate containment integrity. Section 50.63 further requires that each licensee submit the following information:

- A proposed station blackout duration including a justification for the selection based on the redundancy and reliability of the onsite emergency AC power sources, the expected frequency of loss of offsite power, and the probable time needed to restore offsite power.

- A description of the procedures that will be implemented for station blackout events for the duration and for recovery therefrom.

- A list and proposed schedule for any needed modifications to equipment and associated procedures necessary for the specified SBO duration.

The NRC has issued Regulatory Guide 1.155 "Station Blackout" which describes a means acceptable to the NRC Staff for meeting the requirements of 10 C.F.R. 50.63. Regulatory Guide (RG) 1.155 states that the NRC Staff has determined that NUMARC 87-00 "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout At Light Water Reactors" also provides guidance that is in large part identical to the RG 1.155 guidance and is acceptable to the NRC Staff for meeting these requirements.

Table 1 to RG 1.155 provides a cross-reference between RG 1.155 and NUMARC 87-00 and notes where the RG takes precedence.

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Oconee has been evaluated against the requirements of the SBO rule using guidance from NUMARC 87-00 except where RG 1.155 takes precedence. The results of this evaluation are detailed in the attached enclosures. The procedure changes identified in the attached enclosures will be completed 120 days after the notification provided by the Director, Office of Nuclear Reactor Regulation in accordance with 10 C.F.R. 50.63(c)(3) or by December 31, 1989, whichever is later.

Very truly yours,

Hal B. Tucker

PGL/III/24

Attachments

xc: S. D. Ebneter, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

A. Marion
Nuclear Management and Resources Council
1776 Eye Street, N.W., Suite 300
Washington, D.C. 20006-2496

P. H. Skinner
NRC Resident Inspector
Oconee Nuclear Station

Proposed Station Blackout Duration

NUMARC 87-00, Section 3 was used to determine a proposed SBO duration of four hours.

The following plant factors were identified in determining the proposed station blackout duration:

1. AC Power Design Characteristic Group is P1 based on:

   a. Expected frequency of grid-related LOOPs does not exceed once per 20 years (Section 3.2.1, Part 1A, p. 3-3);

   b. Estimated frequency of LOOPs due to extremely severe weather places the plant in ESW Group 1 (Section 3.2.1, Part 1B, p. 3-4);

   c. Estimated frequency of LOOPs due to severe weather places the plant in SW Group 1 (Section 3.2.1, Part 1C, p. 3-7);

   d. The offsite power system is in the I1/2 Group (Section 3.2.1, Part 1D, p.3-10);

2. The emergency AC power configuration group is D based on: (Section 3.2.2, Part 2C, p. 3-13)

   a. There are 2 emergency AC power supplies not credited as alternate AC power sources Section 3.2.2, Part 2A, p. 3-15);

   b. 1 emergency AC power supply is necessary to operate safe shutdown equipment following a loss of offsite power (Section 3.2.2, Part 2B, p. 3-15).

3. The target EDG* reliability is 0.975.

   a. A target EDG reliability of 0.975 was selected based on having a nuclear unit average EDG reliability for the last 100 demands greater than 0.95 consistent with NUMARC 87-00, Section 3.2.4.

4. An alternate AC (AAC) power source will be utilized at Oconee which meets the criteria specified in Appendix B to NUMARC 87-00. The AAC source is an EAC power source which meets the assumptions in Section 2.3.1 of NUMARC 87-00.

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* NOTE: Emergency AC power is supplied to Oconee by the Keowee Hydro Station. For purposes of being consistent with NUMARC 87-00, Keowee will be referred to as Oconee's EDG. More information concerning Keowee, may be found in FSAR section 8.3.1.1.1.

The AAC power source is available within ten minutes of the onset of the station blackout event and has sufficient capacity and capability to operate systems necessary for coping with a station blackout for the required SBO duration of four hours to bring and maintain the plant in safe shutdown. It is noted that Class 1E battery(ies) capacity, compressed air and containment isolation need not be addressed.

The AAC power source is the Standby Shutdown Facility (SSF). The SSF houses systems and components necessary to provide an alternate and independent means to achieve and maintain a hot shutdown condition for one or more of the three Oconee units. The SSF was designed to resolve the safe shutdown requirement for fire protection, turbine building flooding and physical security. The SSF has the capability of maintaining hot shutdown conditions in all three units for approximately three days following a loss of normal AC power. This is well beyond the required coping duration of four hours. Due to the safeguards nature of a detailed description of the SSF, no more details of the SSF will be given in this letter. If more information is required, FSAR Section 9.6.1 has a list of correspondence which describes the SSF in detail.

B. Procedure Description

Plant procedures have been reviewed and modified, if necessary, to meet the guidelines in NUMARC 87-00, Section 4 in the following areas. The following procedures have been reviewed:

Station Blackout Response Guidelines

Abnormal Procedure for Loss of Power - AP/1(2)(3)/A/1700/11
Abnormal Procedure for Loss of Main Feedwater - AP/1(2)(3)/A/1700/19
Standby Shutdown Facility Emergency Operating Procedure - OP/0/A/1600/11

AC Power Restoration

Abnormal Procedure for Loss of Power - AP/1(2)(3)/A/1700/11
Emergency Procedures for Capacity Shortage

Severe Weather Guidelines

Abnormal Procedure for Earthquake - AP/1(2)(3)/A/1700/05
Abnormal Procedure for Natural Disasters - AP/1(2)(3)/A/1700/06

The following procedures will be revised:

Abnormal Procedure for Loss of Power - AP/1(2)(3)/A/1700/11
Abnormal Procedure for Loss of Main Feedwater - AP/1(2)(3)/A/1700/19

1. Condensate Inventory For Decay Heat Removal (Section 7.2.1)

It has been determined from Section 7.2.1 of NUMARC 87-00 that 58116 gallons of water are required for decay heat removal for four hours. Technical Specification 3.7.1(i) which requires a lake level of at least 775' above sea level, provides more than the required quantity for coping with a four hour station blackout. The SSF auxiliary service water pump takes suction from the condenser cooling water piping, which is continuously provided with water from the lake via an AC independent siphon. No plant modifications or procedure changes are needed to utilize these water sources.

2. Reactor Coolant Inventory (Section 2.5)

The AAC source powers the necessary make-up systems to maintain adequate reactor coolant system inventory to ensure that the core is cooled for the required coping duration.

3. Effects of Loss of Ventilation (Section 7.2.4)

Since the SSF Auxiliary Service Water pump is inside the SSF, it is cooled by the SSF ventilation system which is powered by the SSF diesel generator. Therefore, no analysis of loss of ventilation for the steam driven auxiliary service water pump need be performed.

The assumption in NUMARC 87-00, Section 2.7.1 that the control room will not exceed 120°F during a station blackout has been assessed. The control room at Oconee, which is the SSF control room during a SBO, does not exceed 120°F during a station blackout. Therefore, the control room is not a dominant area of concern.