Enclosure 1

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

FEB 24 1978

MEMORANDUM FOR: V. Stello, Jr., Director, Division of Operating Reactors

THRU: D. Eisenhut, Assistant Director for Operational Technology, DOR

FROM: W. Butler, Chief, Plant Systems Branch, DOR

SUBJECT: OCONEE 1, 2 & 3 - DEDICATED SHUTDOWN SYSTEM

The SER concerning the fire protection program at Oconee 1, 2, and 3 is expected to be issued by February 28, 1978. The licensee has proposed a dedicated shutdown system. Because this is the first such dedicated system to be evaluated by the DOR review teams and because Appendix A to BTP 9.5-1 does not clearly state the criteria for fire protection when such a system is provided, we are taking this opportunity to advise you of the approach we plan to take. There may be conflicting staff interpretations of the present guidance documents; therefore, we suggest a DOR/DSS Directors level meeting to assure that DOR/DSS management supports the review team's interpretation.

The licensee has proposed to provide a dedicated safe shutdown system which is in addition to and independent of the currently installed shutdown capability. For a fire situation requiring its use, the system would be capable of achieving and maintaining a safe hot shutdown condition for all three Oconee units. This capability would be housed in a new facility independent of present buildings. The proposed facility will include the following dedicated equipment: One high headpump (supply to steam generators), one diesel generator (AC power requirements), one battery (DC power requirements), power distribution system, HVAC for the facility, instrumentation, and control panels. In addition, three pumps for reactor makeup will be provided; one installed in each reactor containment. Electrical cabling to the loads in containment will be run separately from existing cables. The system installation will be designed such that fires would not affect both the existing systems for safe shutdown and the new dedicated system.

An evaluation will be made to assure that spurious valve operation caused by fire will not affect the integrity of the reactor coolant pressure boundary. (This study has not yet been discussed with the licensee).

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The system will satisfy all the criteria of Staff Position DGP-3 - Alternate Shutdown System (Enclosure 1). (Note: DGP-3 is a draft position reflecting the current status of the DOR review team's views on this subject. Portions of this position have been discussed with the NRR Fire Protection Review Group; however, the review group has not agreed that this position is complete.)

Each reactor coolant makeup pump would be sized to supply makeup to the reactor coolant system for an extended station blackout while going from hot power to hot shutdown and to provide normal leakage (i.e., about 1 gpm/unit). This system also provides a means of adding negative reactivity.

The high head pump feeding the steam generators would be sized to provide in excess of the required flow for the three units to provide steam generator makeup for decay heat removal under feed and blowdown conditions. Water will be drawn from the ultimate heat sink (i.e., intake canal).

A hot shutdown condition will be maintainable in excess of four days without repairs. Initially makeup to the reactor will be from the spent fuel pool. An additional supply of borated water is available from the borated water storage tanks which can be placed in operation as the spent fuel pool water is used to provide reactor makeup water for several weeks.

To achieve a cold shutdown condition following certain fires, repairs to cabling for the low pressure heat removal systems would be required. An evaluation will be made to assure that through emergency repairs, at least one train of low pressure decay heat removal systems will be available following any fire, to achieve the cold shutdown condition. This requirement has not yet been discussed with the licensee.

Because (1) the new dedicated system will have the capability to maintain all three units in a safe condition with continued decay heat removal at hot shutdown conditions for an extended period, (2) the system is an addition to existing decay heat removal systems for hot shutdown conditions and (3) an event which requires the use of the new dedicated system is of low probability, we do not deem it necessary to require the licensee to include the capability to reach cold shutdown without repair in the new dedicated system.

Because this dedicated system will be independent (except for some items such as sensors) of currently existing systems, the DOR review team proposes to accept manual fire protection for several areas that would under other circumstances be required to have automatic fixed water suppression systems (e.g., cable spreading room). However, for these areas the review team has also found favorably in regard to accessibility for the manual systems.

There are two staff views on the fire protection required in an area such as a cable spreading room when a dedicated system is provided. All views agree that at least a detection system and a manual suppression system are required. One view holds that this is sufficient if the combustibles are accessible for fire fighting. The other view holds that at least one fixed manual suppression system or automatic gas suppression system is required where accessibility is questionable or where redundant safe shutdown trains can be affected by the fire. This second view, if adopted as NRC policy would require addition suppression systems in the Oconee cable spreading room and perhaps other areas as well.

This matter was discussed by the NRR fire protection review group on February 15, 1978.

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Enclosure 2

Staff Requirements

1.0 Minimum safe shutdown systems when one division of all safety systems is not available.

1.1 Following any fire, the plant can be brought to hot shutdown conditions using equipment and systems that are free of fire damage.

1.2 The plant should be capable of maintaining hot shutdown conditions for an extended time period significantly longer than 72 hours.

1.3 Fire damage to systems necessary to achieve and maintain cold shutdown conditions should be limited so that repairs can be made and cold shutdown conditions achieved within 72 hours.

1.4 Repair procedures for cold shutdown systems should be prepared now and material needed for such repairs should be on the site.

1.5 The hot shutdown condition must be achievable with power from the offsite power system, and upon its loss, with power from the onsite power system. A dedicated power supply may be substituted for the onsite power system.

1.6 The power needed to achieve the cold shutdown condition may be obtained from any one of the offsite power, onsite power, and dedicated power system.

1.7 When these minimum systems are provided their adequacy shall be verified by a thorough evaluation of:

a. Systems required for hot shutdown;
b. Systems required for cold shutdown;
c. Fire damage to power distribution systems; and
d. Interactions caused by fire damage to power and water supply systems and to supporting systems, i.e., component cooling water supply.

2.0 Minimum fire protection when dedicated or alternate shutdown systems are provided.

2.1 The fire protection systems in areas (such as cable spreading rooms) that contain cables for a large number of systems should consist of:

a. Fire detection system;
b. Hose stations; and
c. Fixed manual suppression system (gas or water)

NOTE: Consideration to preventing fire propagation via covered trays, fire retardant coating, barriers or blankets on a case-by-case basis.

2.2 Where access is difficult or impossible automatic systems should be provided.

2.3 Where modifications will not be implemented for an extended period, interim protection measures should be required to compensate for the lack of protection.

Enclosure 3

LIST OF ATTENDEES

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