

DUKE POWER COMPANY  
OCONEE UNIT 1

Report No.: AO-269/75-8

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Report Date: July 18, 1975

Date of Occurrence: July 4, 1975

Facility: Oconee Unit 1, Seneca, South Carolina

Identification of Occurrence: Failure to provide required emergency power sources

Conditions Prior to Occurrence: Units 1 and 3 at 100 percent full power;  
Unit 2 shut down

Description of Occurrence:

On July 3, 1975 at 1835, it was determined that Keowee Hydro Station, Unit 2, could not be synchronized to the system and thus was declared inoperable. In accordance with Technical Specification 3.7.2(b), continued power operation is permitted for up to 24 hours provided the operable Keowee unit is connected to the operable underground feeder circuitry. It was expected that maintenance of the unit would not exceed the allowable 24 hour maintenance period.

At approximately 1600 on July 4, 1975, it was determined that Keowee Unit 2 would possibly not be operable by 1835, the end of the allowable maintenance period. The provisions of Technical Specification 3.7.4 allow continued power operation, but require that the 4160 volt standby buses be energized within 30 minutes by one of the Lee combustion turbines through the isolated 100 kV transmission line.

Due to highly active thunderstorms in the area, and heavy usage of the two transmission lines between the Lee Steam Station and the Central switchyard, the system dispatcher decided to wait until 1800 to place a combustion turbine in service. At 1800, the Lee Steam Station operator was notified that backup emergency power was required for Oconee. An attempt to place a combustion turbine in service on a non-isolated 100 kV transmission line resulted in the combustion turbine tripping at 1820. A shutdown of operating reactors was initiated at 1835 and continued until 1903 when transformer CT-5 was energized by a Lee combustion turbine on the isolated transmission line. Keowee Unit 2 was declared operational at 2316 July 4, 1975.

Designation of Apparent Cause of Occurrence:

Keowee Unit 2 was declared inoperable due to its inability to automatically start and synchronize with the system grid. This was traced to a misadjusted governor on the unit.

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The Lee combustion turbine was not initially put on the isolated transmission system based upon the dispatcher's assessment of the most reliable system configuration during the thunderstorm. This was not in accordance with established procedures and resulted in the combustion turbine tripping.

Analysis of Occurrence:

The Keowee Hydro Station provides two redundant sources of emergency power for Oconee. The Lee combustion turbine, through the isolated 100 kV transmission line, is a source of backup emergency power in the event there is a loss of normal and startup transformers for all three units, a loss of both Keowee units and a system-wide blackout. In this incident, only one Keowee hydro unit was inoperable for approximately five hours longer than permitted by Technical Specifications. The operating Keowee hydro unit did not have a backup emergency power source for approximately  $\frac{1}{2}$  hour longer than permitted by Technical Specifications. Throughout this incident, all buses remained energized with several redundant sources of power available from the operating Oconee units and the 230 and 500 kV system grids. It is concluded that the health and safety of the public was not affected by this incident.

Corrective Action:

Keowee Unit 2 was returned to service and tested satisfactorily. The Lee combustion turbine was placed in service on the isolated 100 kV transmission line and performed satisfactorily. In order to prevent a future recurrence, system dispatching personnel will be reminded of the unique requirements of a nuclear station with regard to emergency power sources.