DUKE POWER COMPANY
OCONEE UNIT 1

5-14-75

Report No.: AO-269/75-4

Report Date: May 14, 1975

Occurrence Date: April 30, 1975

Facility: Oconee Unit 1, Seneca, South Carolina

Identification of Occurrence: Keowee Unit 1 trip during emergency start test

Conditions Prior to Occurrence: Unit at power operation

Description of Occurrence:

On April 30, 1975, the periodic Keowee Hydro Emergency Start Test was performed from the Oconee Unit 1 and 2 control room. The test is performed by locking-out one Keowee unit and then emergency starting the remaining unit. When Keowee Unit 2 was tested, the unit responded properly to the emergency start signal; however, after running for six minutes, the unit tripped due to a low thrust bearing oil level signal. The test was repeated with the unit again tripping after six minutes.

Designation of Apparent Cause of Occurrence:

When Keowee Unit 2 was allowed to operate in the unloaded condition, the governor action was not sufficient to control the unit speed. During this incident, the unit oscillated between 90 and 140 rpm. This variation in speed resulted in sloshing of the thrust bearing oil, which in turn caused a low level indication. A test was performed in which the oil level probe was lowered approximately 1/4 inch. The unit was allowed to run for approximately 12 minutes and did not experience a trip. The oil level probe was then raised, resulting in a unit trip. The apparent cause of this occurrence was instability in the control system for Keowee Unit 2 while operating in the unloaded condition.

Analysis of Occurrence:

The Keowee Hydro Station supplies emergency power to the Oconee Nuclear Station in the event of a system blackout and the loss of the Oconee units. This incident resulted in both Keowee units being inoperable for a short period of time. Should emergency power have been required, the lock-out on Keowee Unit 1 could have been removed and the unit restored to service almost immediately. Keowee Unit 1 successfully passed the Emergency Start Test. Had emergency power have been necessary, Keowee Unit 2 would have also performed satisfactorily because the unit would have been started and loaded immediately. The control system would have regulated unit speed and the unit would not have tripped. It is concluded that the health and safety of the public was not affected by this occurrence.

Corrective Action:

The immediate corrective action was to lower the thrust bearing oil level probe for Keowee Unit 2 approximately 1/4 inch to assure proper operation of the unit even in the unloaded condition. Permanent corrective action in the form of corrective maintenance to the governor system has been completed. This should eliminate the possibility of a unit trip due to an erroneous low oil level signal.