

TENNESSEE VALLEY AUTHORITY  
CHATTANOOGA, TENNESSEE  
37401



April 19, 1974



Mr. John F. O'Leary, Director  
Directorate of Licensing  
Office of Regulation  
U.S. Atomic Energy Commission,  
Washington, DC 20545

Dear Mr. O'Leary:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 -  
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - ABNORMAL  
OCCURRENCE REPORT BFAO-7424W

The enclosed report is to provide details concerning a tornado which resulted in plant shutdown and loss of one 161-kV line. This event occurred on Browns Ferry Nuclear Plant unit 1 on April 3, 1974, and is submitted in accordance with Appendix A to Regulatory Guide 1.16, Revision 1, October 1973.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*E. F. Thomas*

E. F. Thomas  
Director of Power Production

Enclosure

CC (Enclosure):

Mr. Norman C. Moselcy, Director  
Region II Regulatory Operations Office, USAEC  
230 Peachtree Street, NW., Suite 818  
Atlanta, Georgia 30303

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## ABNORMAL OCCURRENCE REPORT

Report No.: BFAO-7424W  
Report Date: April 19, 1974  
Occurrence Date: April 3, 1974  
Facility: Browns Ferry Nuclear Plant unit 1

### Identification of Occurrence

Tornado resulting in plant shutdown and loss of one 161-kV line.

### Conditions Prior to Occurrence

The reactor was in operation at approximately 92-percent power supplying electricity to the TVA system over five 500-kV transmission lines. Two 161-kV transmission lines which supply the plant were also energized.

### Description of Occurrence

At approximately 6:15 p.m. on April 3, the plant was notified that a tornado warning was in effect for the area. At this time, new fuel inspection operations were terminated on the refueling floor and the fuel-handling crew was removed from the refueling floor.

At approximately 6:53 p.m., the unit tripped as a result of transmission interruptions resulting from tornadoes in the area. By correlating the events from the electrical sequential events recorder and the reactor sequential events recorder, it can be seen that the Trinity Substation and the Trinity lines received the first damage. Both the 500-kV line and the 161-kV line from Trinity tripped early in the series of events. Both reclosed and tripped again.

The main generator experienced a generator overcurrent relay operation in the "B" phase either as a result of a breaker failure on the Trinity line or as a result of faults elsewhere on the 500-kV system. The reactor scrambled by action of the load reject relay. All of the reactor safeguard and auxiliary equipment performed properly during the trip and resulting transient. The main steam isolation valves remained open, station-service electrical power was always available from the Athens 161-kV line, and the main condenser was available as a heat sink.

During the electrical disturbances and related automatic transfer of inplant electrical boards, the "A" and "B" diesels started automatically by an undervoltage condition which appears to have lasted long enough ( $\geq 1\frac{1}{2}$  seconds) to start the diesels, but not long enough ( $\geq 5$  seconds) for the diesels to tie onto their boards. "C" and "D" diesels were manually started to be available should a complete loss of plant offsite power occur. There was no release of radioactive steam or material as a result of the occurrence. The only plant damage sustained was the failure of one 500-kV switchyard breaker due to a transmission line fault.

Initially, the reactor was held in the hot shutdown condition at near rated pressure until the status of the 500-kV system became known. The unit was then placed in the cold shutdown condition.

Designation of Apparent Cause of Occurrence

The single apparent cause of the occurrence was several tornadoes which passed through the Tennessee Valley area. Subsequent investigation revealed extensive damage to four of the five operable 500-kV lines and to one of the two 161-kV lines. Several towers were down on each line.

Analysis of Occurrence

The plant site was not in the direct path of any of the tornadoes. Offsite power was always available by one 161-kV line, and all plant emergency power diesel generators started properly when actuated either automatically or manually.

Corrective Action

There is no known corrective action to be taken to prevent repetition of this type occurrence.