

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE
37401



May 29, 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 BFEAO-7420W

The enclosed report is to provide details concerning two river temperature increases exceeding the Environmental Technical Specification, which occurred on Browns Ferry Nuclear Plant unit 1 on May 19, 1974, while the plant was in the shutdown condition. This report 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

Enclosures

CC (Enclosures):

Mr. Norman C. Moseley, Director
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ABNORMAL OCCURRENCE REPORT

Report No.: BFEAO-7420W
Report Date: May 29, 1974
Occurrence Date: May 19, 1974
Facility: Browns Ferry Nuclear Plant unit 1

Identification of Occurrence

At 9:15 p.m. and 11:00 p.m. on May 19, 1974, Browns Ferry Nuclear Plant exceeded the Environmental Technical Specification limit of 5.0° F. river temperature increase.

Conditions Prior to Occurrence

The reactor had been in the shutdown condition since May 6. Riverflow at the plant site averaged over 40,000 cfs for May 19. Average daily releases from Guntersville and Wheeler Dams were 27,100 and 48,000 cfs, respectively. The weather was partly cloudy and air temperatures ranged from 85.6° F. at 12 m. to a high of 89.2° F. at 3 p.m.

Description of Occurrence

The temperature difference between the upstream control monitor at TRM 309.7 and the downstream monitor at TRM 292.5, as displayed in the power plant control room, reached 5.9° F. at 9:15 p.m. The data printout from the monitoring stations also showed a temperature difference of 5.2° F. at 11 p.m. Data showing temperatures during the occurrence are tabulated in tables 1, 2, and 3.

Designation of Apparent Cause of Occurrence

This situation was apparently caused by a natural difference in the temperature of the water between the upstream and downstream monitors at the 5-foot depth. This difference is not the result of plant operation but is apparently caused by conditions other than plant operations.

Analysis of Occurrence

Tables 2 and 3 show the variation of temperatures at the surface and at the 5-foot depth throughout the monitored reach of the river during the abnormal occurrence period. These tables show a higher temperature rise between the three upstream monitors than between any of the four monitors in the immediate upstream and downstream vicinity of the plant.

Although the plant had been in shutdown condition since May 6, all three condenser circulating water pumps remained in service providing a flow of about 1,400 cfs. The computer that monitors circulating water conditions was shut down at 12:04 p.m. on May 19. The last temperature recorded showed an average inlet temperature of 75.3° F. and an average outlet temperature of 75.1° F. Therefore, the abnormal occurrence could not have been caused by plant operations.

Corrective Action

An immediate solution to this problem is not available. We are still working on a technique to interpret the data from the monitoring system to account for the effects of solar heating and lateral wind-induced currents. This should provide a river temperature rise more reflective of plant discharge.

Table 1

BROWNS FERRY NUCLEAR PLANTRIVER TEMPERATURES FROM CONTROL ROOM PRINTOUT. °F.

May 19, 1974

<u>Time</u>	<u>Downstream Temperature</u>	<u>Temperature Rise</u>
1500	74.8	1.3
1600	74.9	1.7
1700	75.1	1.9
1800	74.5	0.5
1900	75.0	1.6
2000	76.9	3.2
2014	78.0	4.6
2030	77.2	3.8
2100	78.2	4.0
2114	79.3	5.9
2130	78.3	4.9
2200	76.9	3.5
2300	79.8	0.0
2330	77.5	4.1
2400	77.2	3.8

Table 2

RIVER TEMPERATURES FROM MONITOR PRINTOUT, °F.SURFACE--MAY 19, 1974

Time CT	Station							ΔT
	No. 6 TRM 309.7R	No. 4 TRM 297.78L	No. 7 TRM 295.7R	No. 8 TRM 294.5L	No. 9 TRM 292.5R	No. 10 TRM 292.5L	No. 11 TRM 292.5M	
1200	76.9	82.0	81.7	81.3	80.0	80.2	82.6	5.7
1300	76.8	80.4	84.2	84.6	81.8	82.0	79.3	5.2
1400	74.6	82.7	87.3	83.9	84.0	85.2	80.2	10.6
1500	73.9	82.8	84.9	83.5	85.1	86.7	80.4	12.8
1600	74.2	84.9	88.4	83.2	83.7	85.5	79.3	11.3
1700	74.4	86.1	-	-	-	-	-	-
1800	74.3	84.4	86.6	85.4	83.7	83.0	81.8	9.4
1900	73.9	79.4	83.7	85.3	83.4	83.2	79.9	9.5
2000	73.4	78.1	82.1	79.7	82.6	83.8	79.9	10.4
2100	-	75.8	-	-	-	-	-	-
2200	74.2	75.3	78.8	75.8	78.8	81.7	78.1	7.5
2300	73.4	74.4	78.3	75.8	78.8	81.5	-	8.1
2400	73.6	74.1	78.1	75.5	78.0	79.6	79.2	6.0

ΔT = Difference in temperature between control station No. 6 and the maximum temperature indicated at stations No. 9, No. 10, and No. 11.

Table 3

RIVER TEMPERATURES FROM MONITOR PRINTOUT, °F.FIVE-FOOT DEPTH--MAY 19, 1974

Time	Station							ΔT
	No. 6 TRM 309.7R	No. 4 TRM 297.78L	No. 7 TRM 295.7R	No. 8 TRM 294.5L	No. 9 TRM 292.5R	No. 10 TRM 292.5L	No. 11 TRM 292.5M	
CT								
1200	72.7	73.7	74.7	73.2	73.7	75.1	74.7	2.4
1300	74.4	76.5	74.6	73.6	73.4	76.0	73.5	1.6
1400	73.2	76.8	74.5	73.9	73.9	74.8	73.4	1.6
1500	73.6	76.7	74.6	74.5	73.3	74.7	73.7	1.1
1600	73.7	78.8	74.8	74.1	73.1	75.0	73.7	1.3
1700	73.8	75.5	-	-	-	-	-	-
1800	74.1	74.5	75.3	73.9	73.2	74.5	73.7	0.4
1900	73.9	74.5	75.4	73.4	73.2	74.3	74.1	0.4
2000	73.5	74.6	76.4	73.9	73.3	77.2	74.4	3.7
2100	-	74.6	-	-	-	-	-	-
2200	73.4	74.3	76.0	74.6	75.6	76.5	75.6	3.1
2300	73.4	73.9	76.5	74.4	78.6	75.5	-	5.2
2400	73.4	73.9	76.8	74.1	77.0	74.9	76.1	3.6

ΔT = Difference in temperature between control station No. 6 and the maximum temperature indicated at stations No. 9, No. 10, and No. 11.