NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-259/260/296

FILE NUMBER Env 01

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

TO:	FROM:	DATE OF DOCUMENT
Victor Stello	Tennessee Valley Authority Chattanooga, Tenn J. E. Gilleland	7/15/77
		DATE RECEIVED 7/20/77

LETTER / ORIGINAL / COPY	NOTORIZED / UNCLASSIFIED	PROP	INPUT FORM	NUMBER OF COPIES RECEIVED
X / X /	☐ / X			1 SIGNED

DESCRIPTION

DO NOT REMOVE

ACKNOWLEDGED

PLANT NAME: Browns Ferry Nuclear Plant
Unit No. 1, 2, and 3
RBT 7/21/77

ENCLOSURE

Trans of proposed temporary Changes to the environmental Tech Specs that would approve a temporary increase in the discharge water temperature limits.
2p+4p

SAFETY	FOR ACTION/INFORMATION	ENVIRONMENTAL
ASSIGNED AD:		ASSIGNED AD: V. MOORE (LTR)
BRANCH CHIEF:	Schwencer (1)	BRANCH CHIEF:
PROJECT MANAGER:		PROJECT MANAGER:
LICENSING ASSISTANT:		LICENSING ASSISTANT:
		B. HARLESS

INTERNAL DISTRIBUTION

REG FILES	SYSTEMS SAFETY	PLANT SYSTEMS	SITE SAFETY &
NRC PDR	HEINEMAN	TEDESCO	ENVIRON ANALYSIS
I & E (2)	SCHROEDER	BENAROYA	DENTON & MULLER
OELD		LAINAS	CRUTCHFIELD
GOSSICK & STAFF	ENGINEERING	IPPOLITO	
HANAUER	KNIGHT	F. ROSA	ENVIRO TECH.
MIPC	BOSNAK		ERNST
CASE	SIHWELL	OPERATING REACTORS	BALLARD
BOYD	PAWLICKI	STELLO	YOUNGBLOOD
		EISENHUT	
PROJECT MANAGEMENT	REACTOR SAFETY	SHAO	~~SITE TECH.~~
SKOVHOLT	ROSS	BAER	
P. COLLINS	NOVAK	BUTLER	GAMMILL (2)
HOUSTON	ROSZTOCZY	GRIMES	
MELTZ	CHECK		SITE ANALYSIS
HELTEMES			VOLLMER
SK	AT&I		BUNCH
	SALTZMAN		J. COLLINS
	RUTBERG		KREGER

EXTERNAL DISTRIBUTION

LPDR: Athens, Ala		
TIC	NSIC	
NAT LAB		
REG IV (J. HANCHETT)		
18 CYS ACRS SENT CATEGORY B		

CONTROL NUMBER

EC
1 772020305

NRC FORM 195 (2-76)

830 Power Building

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

July 15, 1977

TVA BFNP TS 87

Regulatory File Cy.

Director of Nuclear Reactor Regulation
Attention: Mr. Victor Stello, Jr., Director
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Stello:

In the Matter of the	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

In accordance with the provisions of 10 CFR Part 50.90, we are enclosing proposed temporary changes to the environmental technical specifications for the Browns Ferry Nuclear Plant unit Nos. 1 and 2 (Appendix B to Facility Operating Licenses DPR-33 and DPR-52), and the Browns Ferry Nuclear Plant unit No. 3 (Appendix B to Facility Operating License DPR-68). Enclosure 1 is a proposed change to Section 2.1 THERMAL DISCHARGE LIMITS that would approve a temporary increase in the discharge water temperature limits. Enclosure 2 provides justification for the requested temporary change. This matter has been discussed with members of your staff. We would appreciate immediate consideration since the plant has been severely derated in recent weeks as a result of our inability to meet the present technical specification limits.

Very truly yours,

J. E. Gilleland
Assistant Manager of Power

Subscribed and sworn to before
me this 15th day of July 1977

Notary Public

My Commission Expires 10/16/78

Enclosures
cc: See page 2

RECEIVED
JUL 20 1977
U.S. NUCLEAR REGULATORY COMMISSION
Mail Section

772020305

Mr. Victor Stello, Jr. JUL 15 1977

cc: Director of Nuclear Reactor Regulation (Enclosures)
Attention: Mr. Tom Wambach
Light Water Reactors Branch No. 1
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, DC 20555

2.0 LIMITING CONDITIONS FOR OPERATION

2.1. THERMAL DISCHARGE LIMITS

Objective

The purpose of this specification is to limit the thermal stress on aquatic life in Wheeler Reservoir by operating Browns Ferry Nuclear Plant so as to meet the applicable water quality temperature standards of the State of Alabama.

Specification

The plant-induced reservoir water temperature at the 5-foot depth at the downstream control point shall not exceed the water temperature measured at the 5-foot depth of the upstream control monitor by more than the applicable maximum temperature rise (currently 5°F) nor shall the reservoir water temperature measured at the 5-foot depth at the downstream control point exceed the applicable maximum water temperature (currently 86°F *,†) due to the discharge of the condenser cooling water. If this limiting condition is exceeded, the plant operator shall initiate control measures. The control measures shall be (1) to reduce the waste heat discharged to the reservoir and/or (2) to request modifications in the releases from TVA's Guntersville and/or Wheeler Dams to increase the streamflow by the Browns Ferry plant.

*During a special diffuser performance study during the summer of 1977 (anticipated completion in June 1977), a meximum temperature rise of 10° F, and a maximum water temperature of 90° F, both recorded at the 5-foot depth, will be permitted for a time not to exceed a cumulative total of 7 days.

†During the interim until August 31, 1977, the maximum water temperature allowed shall be 90°F.

Monitoring Requirement

The water temperature data collected by the thermal monitoring network is telemetered to the Browns Ferry meteorological station. The meteorological station will receive the data and automatically record the readings every 60 minutes. All temperature data are recorded on paper tape and maintained for record keeping purposes. The 5-foot depth temperature data which are used to prevent exceeding the limiting condition will be transmitted to the control room and will be visually displayed for monitoring purposes. The accuracy of the system and the sensitivity of the thermistor sensors are designed to be ± 0.3°F and 0.01°F, respectively.

Three thermal monitors spaced across the reservoir in the vicinity of river mile 292.5 shall serve as the downstream control. Two monitors located above the plant, one located at about river mile 297.6, and a second located in this vicinity will provide the upstream water temperature data. The system is designed so that the downstream control monitors serve as backup for one another and similarly for the two upstream monitors. The locations of existing temperature monitors are displayed in Figure 2.1-1.

In the event the system described is out of service, an alternate method will be employed three times a day (once each shift) to measure the river temperature at the 5-foot depth in the vicinity of the upstream and downstream control monitors and thus determine the temperature rise and the maximum river water temperature below the plant. When such a method would result in an imminent and substantial endangerment to the safety of personnel, this paragraph shall not apply.

2.1 Continued

Bases

TVA, as a Federal agency, is required by Section 313 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) and by Executive Order 11507, "Prevention, Control and Abatement of Air and Water Pollution at Federal Facilities," to meet applicable Federal, state, and local water quality standards. On July 17, 1972, the State of Alabama adopted and on September 19, 1972, the Environmental Protection Agency approved thermal criteria for surface waters in the State of Alabama. The current applicable thermal standards are to limit the maximum temperature rise above natural temperature before the addition of artificial heat to 5°F and the maximum water temperature to 86°F. In the application of this temperature criteria the temperature shall be measured, in the case of Wheeler Reservoir, at a depth of 5 feet. The higher temperature limits during the special diffuser performance study during the summer of 1977 will be for brief periods and will not adversely affect the environment.

The Tennessee Valley Authority has taken action to comply with applicable thermal water quality standards of the State of Alabama in the operation of the 3-unit Browns Ferry facility by installing mechanical draft cooling towers. However, inadequate cooling tower performance has resulted in drastic curtailment of power generation during summer periods when peak load demands are critical on the TVA system to meet thermal standards.

The Browns Ferry Nuclear Plant Environmental Statement analyzed the environmental effects of operating the plant with a 10°F rise and 93°F maximum temperature limitation. This evaluation concluded that the 10°F and 93°F limitations would be adequate to protect aquatic life. Hydrologic studies recently conducted confirm that a 90°F limitation would not result in excessive temperature conditions in the cool water fisheries habitat downstream from the plant.

TVA has requested from EPA and the State of Alabama that the maximum temperature limitation be increased to 90°F. The EPA is considering an adjudicatory hearing on the matter and agrees that the plant should be allowed to operate at this higher limitation for an interim period until August 31, 1977. In discussions with the Alabama Water Improvement Commission, State water quality officials also indicated concurrence with the 90°F limit.

All systems described for thermal discharge limits will be operational prior to any significant discharge of waste heat. The placement of the temperature monitoring instruments shall be such that compliance with water quality criteria will be demonstrated. The placement of the temperature sensors at the 5-foot depth in the waters of Wheeler Reservoir is in accordance with the requirements of the water quality criteria of the State of Alabama. The temperature data is converted to digital data at the station on the reservoir. The transmission, computer storage, and monitoring system is being used at other facilities and has performed accurately and reliably.

Enclosure 2

Justification for Proposed ETS Change

The Tennessee Valley Authority has taken action to comply with applicable thermal water quality standards of the State of Alabama in the operation of the 3-unit Browns Ferry facility by installing mechanical draft cooling towers. However, inadequate cooling tower performance has resulted in drastic curtailment of power generation to meet thermal standards during summer periods when peak load demands are critical on the TVA system.

Recent operating experience has demonstrated that the capability of the mechanical draft cooling towers is reduced by approximately 20 percent when meteorological conditions result in a recirculation of the cooling tower discharge plume. This reduction in cooling tower capability results in an increase in the tower discharge water temperature of around 3.5°F. The reduced tower capability coupled with extremely high ambient wet bulb temperatures has required reduction in plant generation of 50 percent or more during periods of peak system demands.

In addition to these inherent operating problems, TVA recently experienced the partial collapse of the No. 5 tower at Browns Ferry making it unavailable for an indefinite period of time. A similar failure of an Ecodyne tower at another power plant in Texas makes the continued structural integrity of the remaining cooling towers at Browns Ferry questionable without substantial modifications. Structural repairs of the type needed cannot be made to a tower without removing it from service. Thus, we will experience additional constraints on our ability to operate the plant within the present temperature limit of 86°F and at any reasonable generation

level until these problems are corrected. Thus, a temporary relaxation of the maximum temperature limit of 86°F to the proposed 90°F value is warranted and is urgently needed.

The Browns Ferry Nuclear Plant Environmental Statement analyzed the environmental effects of operating the plant with a 10°F rise and 93°F maximum temperature limintation. This evaluation concluded that the 10°F and 93°F limitations would be adequate to protect aquatic life. Hydrologic studies recently conducted confirm that a 90°F limitation would not result in excessive temperature conditons in the cool water fisheries habitat downstream from the plant. This habitat is located below Browns Ferry in the area between the Elk River and Wheeler Dam. The mouth of the Elk River is at about Tennessee River Mile 284 or about 10 miles below Browns Ferry Ferry site. The expected maximum temperature at this location was calculated to be 89°F. Based upon evaluations of aquatic impacts in the Browns Ferry Nuclear Plant Final Environmental Statement and recent hydrologic analyses TVA concludes that operation of the plant using the 90°F maximum limitation will not result in significant biological effects.

TVA has requested from EPA and the State of Alabama that the maximum temperature limitation be increased to 90°F. The EPA is considering an ajudicatory hearing on the matter and agrees that the plant should be allowed to operate at this higher limitation for an interim period until August 31, 1977.

In discussions with the Alabama Water Improvement Commission, State water quality officials also indicated concurrence with the 90°F limit.