

50-259/260/291

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TO:

Mr. Victor Stello, Jr.

FROM:

Tennessee Valley Authority  
Chattanooga, Tennessee  
J. E. Gilleland

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## DESCRIPTION

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PLANT NAME:

(2-P)

Browns Ferry Units 1-2-3

RJL

## ENCLOSURE

Amdt. to OL/change to Appendix B tech  
specs...concerning Thermal Discharge  
Limits.....

## SAFETY

## FOR ACTION/INFORMATION

## ENVIRO

ASSIGNED AD:

BRANCH CHIEF:

PROJECT MANAGER:

LIC. ASST.:

Schwencer (S)  
Wambach  
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ASSIGNED AD:

BRANCH CHIEF:

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LIC. ASST.:

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CASE	KNIGHT		BALLARD
HANAUER	SHWEIL	OPERATING REACTORS	SPANGLER
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PROJECT MANAGEMENT	REACTOR SAFETY	OPERATING TECH.	SITE TECH.
BOYD	ROSS	EISENHUT	CAMMILL
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<input checked="" type="checkbox"/> ACRS 16 CYS - HOLDING / UN	<i>AS CAP B</i>		771530101

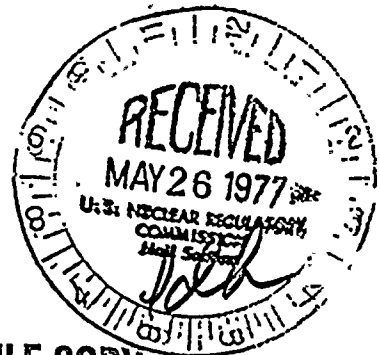


830 Power Building  
TENNESSEE VALLEY AUTHORITY  
CHATTANOOGA, TENNESSEE 37401

May 23, 1977

TVA BFNP TS 83

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:

**REGULATORY DOCKET FILE COPY**

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. Approval is requested by June 6, 1977, so the testing may proceed on schedule.

Very truly yours,

*J. E. Gilleland*  
J. E. Gilleland  
Assistant Manager of Power

Subscribed and sworn to before  
me this 23<sup>rd</sup> day of May 1977

*Laura R. Riser*  
Notary Public

My Commission Expires 10/10/78

Enclosures  
cc: See page 2

771530101

Mr. Victor Stello, Jr.

May 23, 1977

cc (Enclosures)

Mr. Tom Wombach  
Operating 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 maximum temperature rise of 10°F and a maximum water temperature of 90°F, both recorded at the 5-foot depth, will be permitted.

#### 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

#### 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  $\pm 0.3^\circ\text{F}$  and  $0.01^\circ\text{F}$ , 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.

Proposed Revision

The following is a brief discussion of the short-term field study that TVA proposes to conduct in order to verify plant discharge diffuser mixing.

TVA proposes to conduct a series of instream temperature and flow measurements during the summer of 1977 in Wheeler Reservoir near the Browns Ferry Nuclear Plant, using specially equipped boats. Although the period of testing may be several weeks long, the actual test time (total) is not expected to exceed approximately one week. The tests will evaluate the actual thermal mixing characteristics of the diffusers under preplanned conditions of river flow and plant operation consistent with system power generation requirements. The results of these tests will be used to:

- a. Assist the plant personnel in routinely operating the condenser cooling system of the plant in compliance with the thermal water quality standards and
- b. Further refine theoretical methods and models used in the design of future underwater diffuser systems being considered at new plants.

During initial phases of the tests measurements will be made of the diffuser performance under low and reverse flows in the river with the plant's condenser cooling system operating on cooling towers in the helper mode. During the final phase measurements will be made under the full range of river flows and while the plant is operated with the condenser cooling system in open mode (no cooling towers in service). During the study period records of temperature data from the boat surveys and from the system of installed reservoir monitors will be maintained.

Model verification is required by Section 4.1.1(b) Thermal Plume Mapping of the ETS'S, which states that TVA must "verify the accuracy of thermal plume models used in predicting environmental effects from the thermal releases from the Browns Ferry Plant." This proposed study should provide valuable information in evaluating the accuracy of thermal plume model predictions at Browns Ferry Nuclear Plant.

Due to the nature of this study, the present thermal discharge limits specified in Section 2.1 of the ETS's may be exceeded for short periods of time. Computer model predictions of mixed-temperature rise for the test program indicate that the maximum plant-induced heating will be 5.1°F during one phase of the tests, but during the majority of the test period, the plant-induced heating is expected to be less than 3°F. Although the actual plant-induced heating may be slightly different from the predicted values, TVA believes that a maximum plant-induced temperature rise of 10°F or a maximum plant-induced water temperature of 90°F in Wheeler Reservoir for such a short duration would only result in a few fish leaving the thermally-influenced area. Upon completion of the tests, the fish would be expected to return to the area. Such movements would have no significant impact on the Wheeler Reservoir fisheries resources. All other specifications and requirements related to thermal discharges from the Browns Ferry Nuclear Plant would remain in effect.

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

MAY 23 1977

TVA BFNP TS 83

Director of Nuclear Reactor Regulation  
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Division of Operating Reactors  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

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Very truly yours,

*J. E. Gilleland*  
J. E. Gilleland  
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*Susan Renner*  
Notary Public

My Commission Expires 10/1/78

Enclosures  
cc: See page 2

Mr. Victor Stello, Jr.

MAY 23 1977

cc (Enclosures):

Mr. Tom Wombach  
Operating 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

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CHATTANOOGA, TENNESSEE 37401

**TVA BFNP TS 83**

Dear Mr. Stello:

Very truly yours,

**An Equal Opportunity Employer**

Mr. Victor Stello, Jr.

MAY 23 1977

cc (Enclosures):

Mr. Tom Wombach  
Operating Reactors Branch No. 1  
Division of Operating Reactors  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

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