



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20545

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 61
License No. DPR-33

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated July 14, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C(2) of Facility License No. DPR-33 is hereby amended to read as follows:

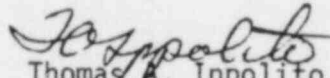
(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 61, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

8007240 231

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 15, 1980

ATTACHMENT TO LICENSE AMENDMENT NO. 61

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise Appendix B as follows:

1. Remove the following pages and replace with identically numbered pages:

1/2

2. The underlined pages are those being changed; marginal lines on these pages indicate the revised area. The overleaf pages are provided for convenience.

1.0 DEFINITIONS

The following terms are defined for uniform interpretation of these specifications.

Administrative Terminology

Environmental limiting condition for operation--any limiting condition for plant operation as stated in Section 2 of the Browns Ferry Nuclear Plant Environmental Technical Specifications.

Unusual event with the potential for a significant environmental impact--an event that results in noncompliance with an environmental technical specification, or an event that results in uncontrolled or unplanned releases of chemical, radioactive, thermal, or other discharges from the Browns Ferry Nuclear Plant in excess of applicable Federal, state, and local regulations.

Thermal Properties

Thermal limits--limits defined for temperatures, spatial changes in temperature, and temporal changes in temperature within Wheeler Reservoir that are attributable to thermal discharges from Browns Ferry Nuclear Plant.

Intake temperature--the average temperature at a given time within the intake system at a point beyond the intake pumps.

Discharge temperature--the average temperature at a given time in the cooling water return channel or at the condenser outlet butterfly valves.

Delta T (ΔT)--the difference in temperatures of the river at the control monitors attributable to thermal discharges from Browns Ferry Nuclear Plant.

Instrumentation Properties

Accuracy--a measure of the difference between the true and measured values of a given parameter, hence a measure of error.

Minimum detectable level--that level below which a specific detector, instrument, or analysis is unable to detect the presence of a given constituent.

Sensitivity--the minimum change in the variable detected by a given sensor.

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 maximum plant-induced temperature rise and the maximum water temperature measured downstream of the plant discharge in Wheeler Reservoir caused by the discharge of condenser cooling water shall not exceed the more restrictive of the applicable maximum limits as specified by NPDES Permit No. AL0022080, which has been issued by the Environmental Protection Agency, or a 10°F thermal use above ambient water temperature with a maximum temperature not to exceed 93°F after reasonable mixing.*

If these limiting conditions are predicted, 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.

*The NRC Final Environmental Statement has previously evaluated temperature criteria of 10°F thermal rise above ambient water temperature with a maximum temperature not to exceed 93°F after reasonable mixing. The NRC cost benefit analysis regarding reservoir temperature must be reevaluated before these limits are exceeded by TVA.

Amendment No. 52, 61

Reservoir water temperatures used to help show compliance with applicable standards will be measured at the one-meter and two-meter depths and averaged to give a temperature applicable to the five-foot depth, which is the point of application of the current Alabama temperature standards. Three thermal monitors spaced across the reservoir in the vicinity of river mile 293.5 shall be used to measure downstream mixed water temperatures. The system is designed so that the downstream monitors serve as backup for one another. The accuracy of the monitoring equipment and the sensitivity of the thermistor sensors are designed to be $\pm 0.3^\circ\text{F}$ and 0.01°F , respectively. The locations of temperature monitors are displayed in Figure 2.1-1.

The plant-induced temperature rise shall be computed using a computer model for the mixing of the plant discharge. This model requires measured plant data as well as downstream reservoir temperatures as input and will be updated as necessary to reflect current understanding of discharge mixing predictions.

All necessary plant and reservoir data is transmitted to the Browns Ferry meteorological station. The meteorological station will receive the data and record the readings once hourly. All data are automatically recorded and maintained for record keeping purposes. Calculations necessary to compute parameters for showing compliance with applicable thermal standards will automatically be completed by a computer situated in the meteorological station. All measured and computed data which are used to help prevent exceeding the limiting conditions will be transmitted to the control room and will be visually displayed for monitoring purposes.

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 temperature rise and the maximum river 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.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 56
License No. DPR-52

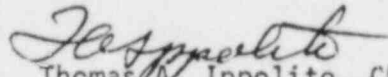
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated July 14, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C(2) of Facility License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 56, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 15, 1980

ATTACHMENT TO LICENSE AMENDMENT NO. 56

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise Appendix B as follows:

1. Remove the following pages and replace with identically numbered pages:

1/2

2. The underlined pages are those being changed; marginal lines on these pages indicate the revised area. The overleaf pages are provided for convenience.

1.0 DEFINITIONS

The following terms are defined for uniform interpretation of these specifications.

Administrative Terminology

Environmental limiting condition for operation--any limiting condition for plant operation as stated in Section 2 of the Browns Ferry Nuclear Plant Environmental Technical Specifications.

Unusual event with the potential for a significant environmental impact--an event that results in noncompliance with an environmental technical specification, or an event that results in uncontrolled or unplanned releases of chemical, radioactive, thermal, or other discharges from the Browns Ferry Nuclear Plant in excess of applicable Federal, state, and local regulations.

Thermal Properties

Thermal limits--limits defined for temperatures, spatial changes in temperature, and temporal changes in temperature within Wheeler Reservoir that are attributable to thermal discharges from Browns Ferry Nuclear Plant.

Intake temperature--the average temperature at a given time within the intake system at a point beyond the intake pumps.

Discharge temperature--the average temperature at a given time in the cooling water return channel or at the condenser outlet butterfly valves.

Delta T (ΔT)--the difference in temperatures of the river at the control monitors attributable to thermal discharges from Browns Ferry Nuclear Plant.

Instrumentation Properties

Accuracy--a measure of the difference between the true and measured values of a given parameter, hence a measure of error.

Minimum detectable level--that level below which a specific detector, instrument, or analysis is unable to detect the presence of a given constituent.

Sensitivity--the minimum change in the variable detected by a given sensor.

Monitoring Requirement

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 maximum plant-induced temperature rise and the maximum water temperature measured downstream of the plant discharge in Wheeler Reservoir caused by the discharge of condenser cooling water shall not exceed the more restrictive of the applicable maximum limits as specified by NPDES Permit No. AL0022080, which has been issued by the Environmental Protection Agency, or a 10°F thermal use above ambient water temperature with a maximum temperature not to exceed 93°F after reasonable mixing.*

If these limiting conditions are predicted, 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.

*The NRC Final Environmental Statement has previously evaluated temperature criteria of 10°F thermal rise above ambient water temperature with a maximum temperature not to exceed 93°F after reasonable mixing. The NRC cost benefit analysis regarding reservoir temperature must be reevaluated before these limits are exceeded by TVA.

Reservoir water temperatures used to help show compliance with applicable standards will be measured at the one-meter and two-meter depths and averaged to give a temperature applicable to the five-foot depth, which is the point of application of the current Alabama temperature standards. Three thermal monitors spaced across the reservoir in the vicinity of river mile 293.5 shall be used to measure downstream mixed water temperatures. The system is designed so that the downstream monitors serve as backup for one another. The accuracy of the monitoring equipment and the sensitivity of the thermistor sensors are designed to be $\pm 0.3^\circ\text{F}$ and 0.01°F , respectively. The locations of temperature monitors are displayed in Figure 2.1-1.

The plant-induced temperature rise shall be computed using a computer model for the mixing of the plant discharge. This model requires measured plant data as well as downstream reservoir temperatures as input and will be updated as necessary to reflect current understanding of discharge mixing predictions.

All necessary plant and reservoir data is transmitted to the Browns Ferry meteorological station. The meteorological station will receive the data and record the readings once hourly. All data are automatically recorded and maintained for record keeping purposes. Calculations necessary to compute parameters for showing compliance with applicable thermal standards will automatically be completed by a computer situated in the meteorological station. All measured and computed data which are used to help prevent exceeding the limiting conditions will be transmitted to the control room and will be visually displayed for monitoring purposes.

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 temperature rise and the maximum river 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.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 33
License No. DPR-68

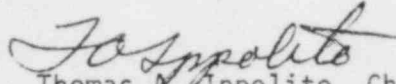
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated July 14, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C(2) of Facility License No. DPR-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 33, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 15, 1980

Monitoring Requirement

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 maximum plant-induced temperature rise and the maximum water temperature measured downstream of the plant discharge in Wheeler Reservoir caused by the discharge of condenser cooling water shall not exceed the more restrictive of the applicable maximum limits as specified by NPDES Permit No. AL0022080, which has been issued by the Environmental Protection Agency, or a 10°F thermal use above ambient water temperature with a maximum temperature not to exceed 93°F after reasonable mixing.*

If these limiting conditions are predicted, 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.

*The NRC Final Environmental Statement has previously evaluated temperature criteria of 10°F thermal rise above ambient water temperature with a maximum temperature not to exceed 93°F after reasonable mixing. The NRC cost benefit analysis regarding reservoir temperature must be reevaluated before these limits are exceeded by TVA.

Amendment No. 24, 33

Reservoir water temperatures used to help show compliance with applicable standards will be measured at the one-meter and two-meter depths and averaged to give a temperature applicable to the five-foot depth, which is the point of application of the current Alabama temperature standards. Three thermal monitors spaced across the reservoir in the vicinity of river mile 293.5 shall be used to measure downstream mixed water temperatures. The system is designed so that the downstream monitors serve as backup for one another. The accuracy of the monitoring equipment and the sensitivity of the thermistor sensors are designed to be $\pm 0.3^\circ\text{F}$ and 0.01°F , respectively. The locations of temperature monitors are displayed in Figure 2.1-1.

The plant-induced temperature rise shall be computed using a computer model for the mixing of the plant discharge. This model requires measured plant data as well as downstream reservoir temperatures as input and will be updated as necessary to reflect current understanding of discharge mixing predictions.

All necessary plant and reservoir data is transmitted to the Browns Ferry meteorological station. The meteorological station will receive the data and record the readings once hourly. All data are automatically recorded and maintained for record keeping purposes. Calculations necessary to compute parameters for showing compliance with applicable thermal standards will automatically be completed by a computer situated in the meteorological station. All measured and computed data which are used to help prevent exceeding the limiting conditions will be transmitted to the control room and will be visually displayed for monitoring purposes.

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 temperature rise and the maximum river 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.