



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555

February 12, 1991

Docket Nos. 50-259, 50-260
and 50-296

Mr. Oliver D. Kingsley, Jr.
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

- SUBJECTS: 1. ISSUANCE OF AMENDMENTS CONCERNING DIESEL GENERATOR TECHNICAL SPECIFICATIONS (TAC NOS. 76130, 76131, AND 76132) (TS 277) - BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3
2. REQUEST FOR ADDITIONAL INFORMATION

The Commission has issued the enclosed Amendment Nos. 181, 191, and 153 to Facility Operating Licenses Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, respectively. These amendments are in response to your applications dated January 31, March 20, May 14, and December 28, 1990.

The amendments modify Sections 3.9 and 4.9, Auxiliary Electrical System, of the Browns Ferry Nuclear Plant, Units 1, 2, and 3, Technical Specifications (TSs). The changes (1) clarify Limiting Condition for Operation (LCO) 3.9.A.1, (2) more accurately describe the 7-day fuel oil requirements for the diesel generators in LCO 3.9.A.6, (3) revise the requirements for sampling the diesel generator fuel oil in Surveillance Requirement (SR) 4.9.A.1.e, and (4) update the testing of the diesel generators in SR 4.9.A.1.a.

A copy of the Safety Evaluation (SE) is also enclosed. Notice of Issuance will be included in the Commission's bi-weekly Federal Register notice.

In addition, as discussed in Section 2.3 of the enclosed SE, you are requested to review Section 4.9 of the TSs against the NRC Standard Technical Specifications for Boiling Water Reactors in the area of requirements on sampling diesel generator fuel oil, to determine if additional TS requirements are needed to assure the high quality of the fuel oil and the operation of the diesel generators. We request that you provide this information within 120 days of receipt of this letter. The reporting and/or recordkeeping requirements contained

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Mr. Oliver D. Kingsley, Jr.

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in this letter affect fewer than ten respondents; therefore, OMB clearance for the request for information is not required under Public Law 96-511.

Sincerely,

Thierry M. Ross, Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 181 to License No. DPR-33
2. Amendment No. 191 to License No. DPR-52
3. Amendment No. 153 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page

EMCB/BC ^{OK FJM}
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OFC	: PDII-4/LA	: PDII-4/PM	: PDII-4/PM	: SELB/BC	: SPLB/BC
NAME	: MKrebs <i>MK</i>	: JDe <i>JDe</i>	: TRoss <i>TR</i>	: FRosa <i>FR</i>	: CMcCracken <i>CM</i>
DATE	: 1/17/90	: 1/17/90	: 1/17/90	: 1/22/90	: 1/18/90

OFC	: OGC	: PDII-4/DD	: PDII-4/D	:	:
NAME	: <i>SB</i>	: FSBTack <i>FT</i>	: FHebbon <i>HT</i>	:	:
DATE	: 2/1/90	: 2/11/90	: 2/11/90	:	:

AMENDMENT NO. 181 FOR BROWNS FERRY UNIT 1 - DOCKET NO. 50-259,
AMENDMENT NO. 191 FOR BROWNS FERRY UNIT 2 - DOCKET NO. 50-260, and
AMENDMENT NO. 153 FOR BROWNS FERRY UNIT 3 - DOCKET NO. 50-296
DATED: February 12, 1991

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 181
License No. DPR-33

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Tennessee Valley Authority (the licensee) dated January 31, March 20, May 14, and December 28 1990, comply with the standard 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 applications, 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.

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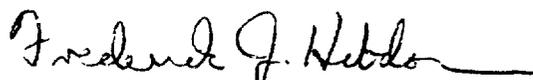
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 181, 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 its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebbon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 12, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 181

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages* are provided to maintain document completeness.

<u>REMOVE</u>	<u>INSERT</u>
3.9/4.9-1	3.9/4.9-1
3.9/4.9-2	3.9/4.9-2
3.9/4.9-3	3.9/4.9-3
3.9/4.9-4	3.9/4.9-4*
3.9/4.9-7	3.9/4.9-7
3.9/4.9-8	3.9/4.9-8*
3.9/4.9-19	3.9/4.9-19
3.9/4.9-20	3.9/4.9-20*
3.9/4.9-21	3.9/4.9-21
3.9/4.9-22	3.9/4.9-22*

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9 Auxiliary Electrical System

Applicability

Applies to all the auxiliary electrical power system.

Objective

To assure an adequate supply of electrical power for operation of those systems required for safety.

Specification

A. Auxiliary Electrical Equipment

1. PRIOR TO STARTUP from a COLD CONDITION, the following must be satisfied:
 - a. Diesel generators A, B, C, and D OPERABLE.
 - b. Requirements 3.9.A.3 through 3.9.A.6 are met.
 - c. At least two of the following offsite power sources are available:
 - (1) The 500-kV system is available to the units 1 and 2 shut-down boards through the unit 1 station-service transformer TUSS/1B with no credit taken for the two 500-kV Trinity lines. If the unit 2 station-service transformer is the second choice, a minimum of two 500-kV lines must be available.

SURVEILLANCE REQUIREMENTS

4.9 Auxiliary Electrical System

Applicability

Applies to the periodic testing requirements of the auxiliary electrical system.

Objective

Verify the OPERABILITY of the auxiliary electrical system.

Specification

A. Auxiliary Electrical System

1. Diesel Generators
 - a. Each diesel generator shall be manually started and loaded to demonstrate operational readiness in accordance with the frequency specified in Table 4.9.A on a staggered test basis. The test shall continue for at least a one-hour period at 100% or greater of the continuous rating of the diesel generator, and the operation of the diesel fuel oil transfer pumps shall be demonstrated. Also, the diesel generator starting air compressor shall be checked for operation and its ability to recharge air receivers.

Once per 18 months, each diesel generator will be tested at a load of at least 2800 KW to demonstrate full load carrying capability for

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

3.9.A.1.c. (Cont'd)

- (2) The 500-kV system is available to the units 1 and 2 shutdown boards through the unit 2 station-service transformer TUSS 2B with no credit taken for the two 500-kV Trinity lines. If the unit 1 station-service transformer is the second choice, a minimum of two 500-kV lines must be available.
- (3) The Trinity 161-kV line is available to the units 1 and 2 shutdown boards through both common station-service transformers.

Notes for (3):

- (a) If unit 3 is claiming the Trinity line as an offsite source, see unit 3 technical specifications, Section 3.9.A.1.c.2.
- (b) If unit 1 is in cold shutdown, only one common station-service transformer is required.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.1.a. (Cont'd)

an interval of not less than 24 hours.

The diesel generator fast starts (10 seconds) from standby conditions shall be performed once per 184 days in these surveillance tests. All other engine starts for the purpose of this test may be preceded by an engine idle start.

Additional reporting requirements due to failures are noted in Table 4.9.A.

All diesel generator starts shall be logged.

- b. Once per operating cycle, a test will be conducted simulating a loss of offsite power and similar conditions that would exist with the presence of an actual safety-injection signal to demonstrate the following:
 - (1) Deenergization of the emergency buses and load shedding from the emergency buses.
 - (2) The diesel starts from ambient condition on the auto-start signal, energizes the emergency buses with permanently connected loads, energizes the auto-connected emergency loads through

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

3.9.A.1.c. (Cont'd)

- (4) The Athens 161-kV line is available to the units 1 and 2 shutdown boards through a common station-service transformer when unit 1 is in Cold Shutdown and unit 3 is not claiming the Athens line as an offsite source.

NOTE FOR (3) AND (4):

With no cooling tower pumps or fans running, a cooling tower transformer may be substituted for a common station-service transformer.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.1.b (Cont'd)

load sequencing, and operates for greater than or equal to five minutes while its generator is loaded with the emergency loads.

- (3) On diesel generator breaker trip, the loads are shed from the emergency buses and the diesel output breaker recloses on the auto-start signal, the emergency buses are energized with permanently connected loads, the auto-connected emergency loads are energized through load sequencing, and the diesel operates for greater than or equal to five minutes while its generator is loaded with the emergency loads.

c. Once a month the quantity of diesel fuel available shall be logged.

d. Each diesel generator shall be given an annual inspection in accordance with instructions based on the manufacturer's recommendations.

e. Quarterly the quality of each diesel generator's (A, B, C, and D) seven-day fuel supply shall be checked. The fuel oil quality shall be within the acceptable limits specified in Table 1 of ASTM-D975-89.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.A. Auxiliary Electrical Equipment

2. The reactor shall not be started up (made critical) from the HOT STANDBY CONDITION unless all of the following conditions are satisfied:

a. At least one offsite power source is available as specified in 3.9.A.1.c.

b. Three units 1 and 2 diesel generators shall be OPERABLE.

c. An additional source of power consisting of one of the following:

(1) A second offsite power source available as specified in 3.9.A.1.c.

(2) A fourth OPERABLE units 1 and 2 diesel generator.

d. Requirements 3.9.A.3 through 3.9.A.6 are met.

4.9.A. Auxiliary Electrical System

2. DC Power System - Unit Batteries (250-V), Diesel-Generator Batteries (125-V) and Shutdown Board Batteries (250-V)

a. Every week the specific gravity, voltage and temperature of the pilot cell and overall battery voltage shall be measured and logged.

b. Every three months the measurement shall be made of voltage of each cell to nearest 0.1 volt, specific gravity of each cell, and temperature of every fifth cell. These measurements shall be logged.

c. At least once every 24 months, a battery rated discharge (capacity) test shall be performed and the voltage, time, and output current measurements shall be logged.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

5. Logic Systems
 - a. Common accident signal logic system is OPERABLE.
 - b. 480-V load shedding logic system is OPERABLE.
6. There shall be a minimum of 35,280 gallons of diesel fuel in each of the 7-day diesel-generator fuel tank assemblies.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.4. (Cont'd)

- c. The loss of voltage and degraded voltage relays which start the diesel generators from the 4-kV shutdown boards shall be calibrated annually for trip and reset and the measurements logged. These relays shall be calibrated as specified in Table 4.9.A.4.c.
- d. 4-kV shutdown board voltages shall be recorded once every 12 hours.

5. 480-V RMOV Boards 1D and 1E

- a. Once per operating cycle the automatic transfer feature for 480-V RMOV boards 1D and 1E shall be functionally tested to verify auto-transfer capability.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.B. Operation with Inoperable Equipment

Whenever the reactor is in Startup mode or Run mode and not in a cold condition, the availability of electric power shall be as specified in 3.9.A except as specified herein.

1. From and after the date that only one offsite power source is available, reactor operation is permissible for 7 days.

2. From and after the date that the 4-kV bus tie board becomes inoperable, reactor operation is permissible indefinitely provided one of the required offsite power sources is not supplied from the 161-kV system through the bus tie board.

4.9.B. Operation with Inoperable Equipment

1. When only one offsite power source is OPERABLE, all units 1 and 2 diesel generators must be demonstrated to be OPERABLE within 24 hours, and power availability for the associated boards shall be verified within 1 hour and at least once per 8 hours thereafter.

2. When a required offsite power source is unavailable to unit 1 because the 4-kV bus tie board or a start bus is inoperable, all unit 1 and 2 diesel generators shall be demonstrated OPERABLE within 24 hours, and power availability for the associated boards shall be verified within 1 hour and at least once per 8 hours thereafter. The remaining offsite source and associated buses shall be checked to be energized daily.

4.9 BASES (Cont'd)

Specification 4.9.D provides surveillance requirements for Unit 3 diesel generators for the purpose of satisfying Specification 3.9.D. It contains less stringent testing requirements for the Unit 3 diesel generators when they are only being used to support Unit 2 equipment.

REFERENCES

1. Normal Auxiliary Power System (BFNP FSAR Subsection 8.4)
2. Standby AC Power Supply and Distribution (BFNP FSAR Subsection 8.5)
3. 250-V DC Power Supply and Distribution (BFNP FSAR Subsection 8.6)
4. Memorandum from Gene M. Wilhoite to H. J. Green dated December 4, 1981 (LOO 811208 664) and memorandum from C. E. Winn to H. J. Green dated January 10, 1983 (G02 830112 002)

4.9 BASES (Cont'd)

The monthly tests of the diesel generators are primarily to check for failures and deterioration in the system since last use. The diesels will be loaded to at least 100 percent of its continuous rating (i.e., \geq 2600 KW) while engine and generator temperatures are stabilized (about one hour). A minimum 75-percent load will prevent soot formation in the cylinders and injection nozzles. Operation up to an equilibrium temperature ensures that there is no overheating problem. The tests also provide an engine and generator operating history to be compared with subsequent engine-generator test data to identify and to correct any mechanical or electrical deficiency before it can result in a system failure.

Diesel testing once per 18 months (i.e., at least once per fuel cycle) at a minimum load of 2800 KW for an interval of not less than 24 hours assures that each diesel generator will be capable of supplying the maximum load during the first 2 hours of a loss of offsite power/loss of coolant accident. This test also demonstrates each diesel generator's long-term load carrying capability.

The test during refueling outages is more comprehensive, including procedures that are most effectively conducted at that time. These include automatic actuation and functional capability tests to verify that the generators can start and be ready to assume load in 10 seconds. The annual inspection will detect any signs of wear long before failure.

BFN tests the 7-day diesel generator fuel oil supplies in accordance with Table 1 of ASTM-D975-89. Each fuel oil supply is tested quarterly.

Battery maintenance with regard to the floating charge, equalizing charge, and electrolyte level will be based on the manufacturer's instruction and sound maintenance practices. In addition, written records will be maintained of the battery performance. The plant batteries will deteriorate with time but precipitous failure is unlikely. The type of surveillance called for in this specification is that which has been demonstrated through experience to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

The equalizing charge, as recommended by the manufacturer, is vital to maintaining the ampere-hour capacity of the battery and will be applied as recommended.

The testing of the logic systems will verify the ability of the logic systems to bring the auxiliary electrical system to running standby readiness with the presence of an accident signal from any reactor or an undervoltage signal on the 4-kV shutdown boards.

The periodic simulation of accident signals in conjunction with diesel generator voltage available signals will confirm the ability of the 480-V load shedding logic system to sequentially shed and restart 480-V loads if an accident signal were present, and diesel generator voltage were the only source of electrical power.

3.9 BASES (Cont'd)

Each 250-V dc shutdown board control power supply can receive power from its own battery, battery charger, or from a spare charger. The chargers are powered from normal plant auxiliary power or from the standby diesel-driven generator system. Zero resistance short circuits between the control power supply and the shutdown board are cleared by fuses located in the respective control power supply. Each power supply is located in the reactor building near the shutdown board it supplies. Each battery is located in its own independently ventilated battery room.

The 250-V dc system is so arranged, and the batteries sized so that the loss of any one unit battery will not prevent the safe shutdown and cooldown of all three units in the event of the loss of offsite power and a design basis accident in any one unit. Loss of control power to any engineered safeguard control circuits is annunciated in the main control room of the unit affected. The loss of one 250-V shutdown board battery affects normal control power for the 480-V and 4,160-V shutdown boards which it supplies. The station battery supplies loads that are not essential for safe shutdown and cooldown of the nuclear system. This battery was not considered in the accident load calculations.

There are two 480-V ac RMOV boards that contain mg sets in their feeder lines. These 480-V ac RMOV boards have an automatic transfer from their normal to alternate power source (480-V ac shutdown boards). The mg sets act as electrical isolators to prevent a fault from propagating between electrical divisions due to an automatic transfer. The 480-V ac RMOV boards involved provide motive power to valves associated with the LPCI mode of the RHR system. Having an mg set out of service reduces the assurance that full RHR (LPCI) capacity will be available when required. Since sufficient equipment is available to maintain the minimum complement required for RHR (LPCI) operation, a 7-day servicing period is justified. Having two mg sets out of service can considerably reduce equipment availability; therefore, the affected unit shall be placed in Cold Shutdown within 24 hours.

The offsite power source requirements are based on the capacity of the respective lines. The Trinity line is limited to supplying two operating units because of the load limitations of CSST's A and B. The Athens line is limited to supplying one operating unit because of the load limitations of the Athens line. The limiting conditions are intended to prevent the 161-kV system from supplying more than two units in the event of a single failure in the offsite power system.

Specification 3.9.D provides the operability requirements for the Unit 3 diesel generators when they serve as emergency power supplies to standby gas treatment train C and control room emergency ventilation train B when they are being considered operable for Unit 2 technical specifications. The allowable out of service time of 30 days is commensurate with the importance of the affected systems when Unit 3 is in cold shutdown, the low probability of a LOCA/Loss of offsite power and availability of onsite power to redundant trains.

AMENDMENT NO. 186

3.9 BASES

The objective of this specification is to assure an adequate source of electrical power to operate facilities to cool the plant during shutdown and to operate the engineered safeguards following an accident. There are three sources of alternating current electrical energy available, namely, the 161-kV transmission system, the 500-kV transmission system, and the diesel generators.

The unit station-service transformer B for unit 1 or the unit station-service transformer B for unit 2 provide noninterruptible sources of offsite power from the 500-kV transmission system to the units 1 and 2 shutdown boards. Auxiliary power can also be supplied from the 161-kV transmission system through the common station-service transformers or through the cooling tower transformers by way of the bus tie board. The 4-kV bus tie board may remain out of service indefinitely provided one of the required offsite power sources is not supplied from the 161-kV system through the bus tie board.

The minimum fuel oil requirement of 35,280 gallons for each diesel generator fuel tank assembly is sufficient for seven days of full load operation of each diesel and is conservatively based on availability of a replenishment supply. Each diesel generator has its own independent 7-day fuel oil storage tank assembly.

The degraded voltage sensing relays provide a start signal to the diesel generators in the event that a deteriorated voltage condition exists on a 4-kV shutdown board. This starting signal is independent of the starting signal generated by the complete loss of voltage relays and will continue to function and start the diesel generators on complete loss of voltage should the loss of voltage relays become inoperable. The 15-day inoperable time limit specified when one of the three phase-to-phase degraded voltage relays is inoperable is justified based on the two-out-of-three permissive logic scheme provided with these relays.

A 4-kV shutdown board is allowed to be out of operation for a brief period to allow for maintenance and testing, provided all remaining 4-kV shutdown boards and associated diesel generators, CS, RHR, (LPCI and containment cooling) systems supplied by the remaining 4-kV shutdown boards, and all emergency 480-V power boards are operable.

There are eight 250-V dc battery systems, each of which consists of a battery, battery charger, and distribution equipment. Three of these systems provide power for unit control functions, operative power for unit motor loads, and alternative drive power for a 115-V ac unit-preferred mg set. One 250-V dc system provides power for common plant and transmission system control functions, drive power for a 115-V ac plant-preferred mg set, and emergency drive power for certain unit large motor loads. The four remaining systems deliver control power to the 4,160-V shutdown boards.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.B. Operation with Inoperable Equipment

Whenever the reactor is in STARTUP mode or RUN mode and not in a cold condition, the availability of electric power shall be as specified in 3.9.A except as specified herein.

1. From and after the date that only one offsite power source is available, reactor operation is permissible for 7 days.
2. From and after the date that the 4-kV bus tie board becomes inoperable, reactor operation is permissible indefinitely provided one of the required offsite power sources is not supplied from the 161-kV system through the bus tie board.

SURVEILLANCE REQUIREMENTS

4.9.B. Operation with Inoperable Equipment

1. When only one offsite power source is OPERABLE, all units 1 and 2 diesel generators must be demonstrated to be OPERABLE within 24 hours, and power availability for the associated boards shall be verified within 1 hour and at least once per 8 hours thereafter.
2. When a required offsite power source is unavailable to unit 1 because the 4-kV bus tie board or a start bus is inoperable, all unit 1 and 2 diesel generators shall be demonstrated OPERABLE within 24 hours, and power availability for the associated boards shall be verified within 1 hour and at least once per 8 hours thereafter. The remaining offsite source and associated buses shall be checked to be energized daily.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

5. Logic Systems

a. Common accident signal logic system is OPERABLE.

b. 480-V load shedding logic system is OPERABLE.

6. There shall be a minimum of 35,280 gallons of diesel fuel in each of the 7-day diesel-generator fuel tank assemblies.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.4. (Cont'd)

c. The loss of voltage and degraded voltage relays which start the diesel generators from the 4-kV shutdown boards shall be calibrated annually for trip and reset and the measurements logged. These relays shall be calibrated as specified in Table 4.9.A.4.c.

d. 4-kV shutdown board voltages shall be recorded once every 12 hours.

5. 480-V RMOV Boards 2D and 2E

a. Once per operating cycle the automatic transfer feature for 480-V RMOV boards 2D and 2E shall be functionally tested to verify auto-transfer capability.

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

2. The reactor shall not be started up (made critical) from the HOT STANDBY CONDITION unless all of the following conditions are satisfied:
 - a. At least one offsite power source is available as specified in 3.9.A.1.c.
 - b. Three units 1 and 2 diesel generators shall be OPERABLE.
 - c. An additional source of power consisting of one of the following:
 - (1) A second offsite power source available as specified in 3.9.A.1.c.
 - (2) A fourth OPERABLE units 1 and 2 diesel generator.
 - d. Requirements 3.9.A.3 through 3.9.A.6 are met.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

2. DC Power System - Unit Batteries (250-V), Diesel-Generator Batteries (125-V) and Shutdown Board Batteries (250-V)
 - a. Every week the specific gravity, voltage and temperature of the pilot cell and overall battery voltage shall be measured and logged.
 - b. Every three months the measurement shall be made of voltage of each cell to nearest 0.1 volt, specific gravity of each cell, and temperature of every fifth cell. These measurements shall be logged.
 - c. At least once every 24 months, a battery rated discharge (capacity) test shall be performed and the voltage, time, and output current measurements shall be logged.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

3.9.A.1.c. (Cont'd)

- (4) The Athens 161-kV line is available to the units 1 and 2 shutdown boards through a common station-service transformer when unit 1 is in Cold Shutdown and unit 3 is not claiming the Athens line as an offsite source.

NOTE FOR (3) AND (4):

With no cooling tower pumps or fans running, a cooling tower transformer may be substituted for a common station-service transformer.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.1.b. (Cont'd)

emergency loads through load sequencing, and operates for greater than or equal to five minutes while its generator is loaded with the emergency loads.

- (3) On diesel generator breaker trip, the loads are shed from the emergency buses and the diesel output breaker recloses on the auto-start signal, the emergency buses are energized with permanently connected loads, the auto-connected emergency loads are energized through load sequencing, and the diesel operates for greater than or equal to five minutes while its generator is loaded with the emergency loads.
- c. Once a month the quantity of diesel fuel available shall be logged.
- d. Each diesel generator shall be given an annual inspection in accordance with instructions based on the manufacturer's recommendations.
- e. Quarterly the quality of each diesel generator's (A, B, C, and D) seven-day fuel supply shall be checked. The fuel oil quality shall be within the acceptable limits specified in Table 1 of ASTM-D975-89.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

3.9.A.1.c. (Cont'd)

- (2) The 500 kV system is available to the units 1 and 2 shutdown boards through the unit 2 station-service transformer TUSS 2B with no credit taken for the two 500-kV Trinity lines. If the unit 1 station-service transformer is the second choice, a minimum of two 500-kV lines must be available.
- (3) The Trinity 161-kV line is available to the units 1 and 2 shutdown boards through both common station-service transformers.

NOTES FOR (3):

- (a) If unit 3 is claiming the Trinity line as an offsite source, see unit 3 technical specifications, Section 3.9.A.1.c.2.
- (b) If unit 1 is in cold shutdown, only one common station-service transformer is required.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.1.a. (Cont'd)

an interval of not less than 24 hours.

The diesel generator fast starts (10 seconds) from standby conditions shall be performed once per 184 days in these surveillance tests. All other engine starts for the purpose of this test may be preceded by an engine idle start.

Additional reporting requirements due to failures are noted in Table 4.9.A.

All diesel generator starts shall be logged.

- b. Once per operating cycle, a test will be conducted simulating a loss of offsite power and similar conditions that would exist with the presence of an actual safety-injection signal to demonstrate the following:
- (1) Deenergization of the emergency buses and load shedding from the emergency buses.
- (2) The diesel starts from ambient condition on the auto-start signal, energizes the emergency buses with permanently connected loads, energizes the auto-connected

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9 AUXILIARY ELECTRICAL SYSTEM

Applicability

Applies to all the auxiliary electrical power system.

Objective

To assure an adequate supply of electrical power for operation of those systems required for safety.

Specification

A. Auxiliary Electrical Equipment

1. PRIOR TO STARTUP from a COLD CONDITION, the following must be satisfied:
 - a. Diesel generators A, B, C, and D OPERABLE.
 - b. Requirements 3.9.A.3 through 3.9.A.6 are met.
 - c. At least two of the following offsite power sources are available:
 - (1) The 500-kV system is available to the units 1 and 2 shut-down boards through the unit 1 station-service transformer TUSS 1B with no credit taken for the two 500-kV Trinity lines. If the unit 2 station-service transformer is the second source, a minimum of two 500-kV lines must be available.

SURVEILLANCE REQUIREMENTS

4.9 AUXILIARY ELECTRICAL SYSTEM

Applicability

Applies to the periodic testing requirements of the auxiliary electrical system.

Objective

Verify the OPERABILITY of the auxiliary electrical system.

Specification

A. Auxiliary Electrical System

1. Diesel Generators
 - a. Each diesel generator shall be manually started and loaded to demonstrate operational readiness in accordance with the frequency specified in Table 4.9.A on a staggered test basis. The test shall continue for at least a one-hour period at 100% or greater of the continuous rating of the diesel generator, and the operation of the diesel fuel oil transfer pumps shall be demonstrated. Also the diesel generator starting air compressor shall be checked for operation and its ability to recharge air receivers.

Once per 18 months, each diesel generator will be tested at a load of at least 2800 KW to demonstrate full load carrying capability for



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 191
License No. DPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Tennessee Valley Authority (the licensee) dated January 31, March 20, May 14, and December 28, 1990, comply 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 applications, 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.

ATTACHMENT TO LICENSE AMENDMENT NO. 191

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf* and spillover** pages are provided to maintain document completeness.

<u>REMOVE</u>	<u>INSERT</u>
3.9/4.9-1	3.9/4.9-1
3.9/4.9-2	3.9/4.9-2
3.9/4.9-3	3.9/4.9-3
3.9/4.9-4	3.9/4.9-4*
3.9/4.9-7	3.9/4.9-7
3.9/4.9-8	3.9/4.9-8*
3.9/4.9-19	3.9/4.9-19
3.9/4.9-20	3.9/4.9-20*
3.9/4.9-21	3.9/4.9-21
3.9/4.9-22	3.9/4.9-22**

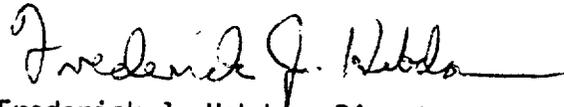
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 191, 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 its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: February 12, 1991

4.9 BASES (Cont'd)

The monthly test of the diesel generators is primarily to check for failures and deterioration in the system since last use. The diesels will be loaded to at least 100 percent of its continuous rating (i.e., \geq 2600 KW) while engine and generator temperatures are stabilized (about one hour). A minimum 75-percent load will prevent soot formation in the cylinders and injection nozzles. Operation up to an equilibrium temperature ensures that there is no overheating problem. The tests also provide an engine and generator operating history to be compared with subsequent engine-generator test data to identify and to correct any mechanical or electrical deficiency before it can result in a system failure.

Diesel testing once per 18 months (i.e., at least once per fuel cycle) at a minimum load of 2800 KW for an interval of not less than 24 hours, assures that each diesel generator will be capable of supplying the maximum load during the first 2 hours of a loss of offsite power/loss of coolant accident. This test also demonstrates each diesel generator's long-term load carrying capability.

The test during refueling outages is more comprehensive, including procedures that are most effectively conducted at that time. These include automatic actuation and functional capability tests to verify that the generators can start and be ready to assume load in 10 seconds. The annual inspection will detect any signs of wear long before failure.

BFN tests the 7-day diesel generator fuel oil supplies in accordance with Table 1 of ASTM-D975-89. Each fuel oil supply is tested quarterly.

Battery maintenance with regard to the floating charge, equalizing charge, and electrolyte level will be based on the manufacturer's instruction and sound maintenance practices. In addition, written records will be maintained of the battery performance. The plant batteries will deteriorate with time but precipitous failure is unlikely. The type of surveillance called for in this specification is that which has been demonstrated through experience to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

The equalizing charge, as recommended by the manufacturer, is vital to maintaining the ampere-hour capacity of the battery and will be applied as recommended.

The testing of the logic systems will verify the ability of the logic systems to bring the auxiliary electrical system to running standby readiness with the presence of an accident signal from any reactor or an undervoltage signal on the 4-kV shutdown boards.

The periodic simulation of accident signals in conjunction with diesel generator voltage available signals will confirm the ability of the 480-V load shedding logic system to sequentially shed and restart 480-V loads if an accident signal were present, and diesel generator voltage was the only source of electrical power.

4.9 BASES (Cont'd)

REFERENCES

1. Normal Auxiliary Power System (BFNP FSAR Subsection 8.4)
2. Standby AC Power Supply and Distribution (BFNP FSAR Subsection 8.5)
3. 250-V DC Power Supply and Distribution (BFNP FSAR Subsection 8.6)
4. Memorandum from Gene M. Wilhoite to H. J. Green dated December 4, 1981 (LOO 811208 664) and memorandum from C. E. Winn to H. J. Green dated January 10, 1983 (G02 830112 002)



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 153
License No. DPR-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Tennessee Valley Authority (the licensee) dated January 31, March 20, May 14, and December 28, 1990, comply 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 applications, 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 Operating 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. 153, 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 its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 12, 1991

3.9 BASES

The objective of this specification is to assure an adequate source of electrical power to operate facilities to cool the plant during shutdown and to operate the engineered safeguards following an accident. There are three sources of alternating current electrical energy available, namely, the 161-kV transmission system, the 500-kV transmission system, and the diesel generators.

The unit station-service transformer B for unit 1 or the unit station-service transformer B for unit 2 provide noninterruptible sources of offsite power from the 500-kV transmission system to the units 1 and 2 shutdown boards. Auxiliary power can also be supplied from the 161-kV transmission system through the common station-service transformers or through the cooling tower transformers by way of the bus tie board. The 4-kV bus tie board may remain out of service indefinitely provided one of the required offsite power sources is not supplied from the 161-kV system through the bus tie board.

The minimum fuel oil requirement of 35,280 gallons for each diesel generator fuel tank assembly is sufficient for seven days of full load operation of each diesel and is conservatively based on availability of a replenishment supply. Each diesel generator has its own independent 7-day fuel oil storage tank assembly.

The degraded voltage sensing relays provide a start signal to the diesel generators in the event that a deteriorated voltage condition exists on a 4-kV shutdown board. This starting signal is independent of the starting signal generated by the complete loss of voltage relays and will continue to function and start the diesel generators on complete loss of voltage should the loss of voltage relays become inoperable. The 15-day inoperable time limit specified when one of the three phase-to-phase degraded voltage relays is inoperable is justified based on the two-out-of-three permissive logic scheme provided with these relays.

A 4-kV shutdown board is allowed to be out of operation for a brief period to allow for maintenance and testing, provided all remaining 4-kV shutdown boards and associated diesel generators, CS, RHR, (LPCI and containment cooling) systems supplied by the remaining 4-kV shutdown boards, and all emergency 480-V power boards are operable.

There are eight 250-V dc battery systems, each of which consists of a battery, battery charger, and distribution equipment. Three of these systems provide power for unit control functions, operative power for unit motor loads, and alternative drive power for a 115-V ac unit-preferred mg set. One 250-V dc system provides power for common plant and transmission system control functions, drive power for a 115-V ac plant-preferred mg set, and emergency drive power for certain unit large motor loads. The four remaining systems deliver control power to the 4,160-V shutdown boards.

3.9 BASES (Cont'd)

Each 250-V dc shutdown board control power supply can receive power from its own battery, battery charger, or from a spare charger. The chargers are powered from normal plant auxiliary power or from the standby diesel-driven generator system. Zero resistance short circuits between the control power supply and the shutdown board are cleared by fuses located in the respective control power supply. Each power supply is located in the reactor building near the shutdown board it supplies. Each battery is located in its own independently ventilated battery room.

The 250-V dc system is so arranged, and the batteries sized so that the loss of any one unit battery will not prevent the safe shutdown and cooldown of all three units in the event of the loss of offsite power and a design basis accident in any one unit. Loss of control power to any engineered safeguard control circuits is annunciated in the main control room of the unit affected. The loss of one 250-V shutdown board battery affects normal control power only for the 4,160-V shutdown board which it supplies. The station battery supplies loads that are not essential for safe shutdown and cooldown of the nuclear system. This battery was not considered in the accident load calculations.

There are two 480-Volt ac RMOV boards that contain mg sets in their feeder lines. These 480-Volt ac RMOV boards have an automatic transfer from their normal to alternate power source (480-Volt ac shutdown boards). The mg sets act as electrical isolators to prevent a fault from propagating between electrical divisions due to an automatic transfer. The 480-Volt ac RMOV boards involved provide motive power to valves associated with the LPCI mode of the RHR system. Having an mg set out of service reduces the assurance that full RHR (LPCI) capacity will be available when required. Since sufficient equipment is available to maintain the minimum complement required for RHR (LPCI) operation, a 7-day servicing period is justified. Having two mg sets out of service can considerably reduce equipment availability; therefore, the affected unit shall be placed in Cold Shutdown within 24 hours.

The offsite power source requirements are based on the capacity of the respective lines. The Trinity line is limited to supplying two operating units because of the load limitations of CSST's A and B. The Athens line is limited to supplying one operating unit because of the load limitations of the Athens line. The limiting conditions are intended to prevent the 161-kV system from supplying more than two units in the event of a single failure in the offsite power system.

ATTACHMENT TO LICENSE AMENDMENT NO. 153

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf* and spillover** pages are provided to maintain document completeness.

<u>REMOVE</u>	<u>INSERT</u>
3.9/4.9-1	3.9/4.9-1
3.9/4.9-2	3.9/4.9-2
3.9/4.9-3	3.9/4.9-3
3.9/4.9-4	3.9/4.9-4*
3.9/4.9-7	3.9/4.9-7
3.9/4.9-8	3.9/4.9-8*
3.9/4.9-18	3.9/4.9-18
3.9/4.9-19	3.9/4.9-19*
3.9/4.9-20	3.9/4.9-20
3.9/4.9-21	3.9/4.9-21**

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9 Auxiliary Electrical System

Applicability

Applies to all the auxiliary electrical power system.

Objective

To assure an adequate supply of electrical power for operation of those systems required for safety.

Specification

A. Auxiliary Electrical Equipment

1. PRIOR TO STARTUP from a COLD CONDITION, the following must be satisfied:

- a. Diesel generators 3A, 3B, 3C, and 3D OPERABLE.
- b. Requirements 3.9.A.3 through 3.9.A.6 are met.
- c. At least two of the following offsite power sources are available:

(1) The 500-kV system is available to the unit 3 shutdown boards through the unit 3 station-service transformer TUSS 3B with no credit taken for the two 500-kV Trinity lines.

4.9 Auxiliary Electrical System

Applicability

Applies to the periodic testing requirements of the auxiliary electrical system.

Objective

Verify the OPERABILITY of the auxiliary electrical system.

Specification

A. Auxiliary Electrical System

1. Diesel Generators

- a. Each diesel generator shall be manually started and loaded to demonstrate operational readiness in accordance with the frequency specified in Table 4.9.A on a staggered test basis. The test shall continue for at least a one-hour period at 100% or greater of the continuous rating of the diesel generator, and the operation of the diesel fuel oil transfer pumps shall be demonstrated. Also, the diesel generator starting air compressor shall be checked for operation and its ability to recharge air receivers.

Once per 18 months, each diesel generator will be tested at a load of at least 2800 KW to demonstrate full load carrying capability

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

3.9.A.1.c. (Cont'd)

- (2) The Trinity 161-kV line is available to the unit 3 shutdown boards through a common station-service or cooling tower transformer.

NOTE FOR (2):

If units 1 and 2 are both in operation and claiming the Trinity line as an offsite source, TUSS 3B must be claimed as the other offsite source for unit 3.

- (3) The Athens 161-kV line is available to unit 3 shutdown boards through a common station-service or cooling tower transformer.

NOTE FOR (3):

If either unit 1 or unit 2 is claiming the Athens line as an offsite source, it may not be claimed as an offsite source for unit 3.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.1.a. (Cont'd)

for an interval of not less than 24 hours.

The diesel generator fast starts (10 seconds) from standby conditions shall be performed once per 184 days in these surveillance tests. All other engine starts for the purpose of this test may be preceded by an engine idle start.

Additional reporting requirements due to failures are noted in Table 4.9.A.

All diesel generator starts shall be logged.

- b. Once per operating cycle, a test will be conducted simulating a loss of offsite power and similar conditions that would exist with the presence of an actual safety-injection signal to demonstrate the following:

- (1) Deenergization of the emergency buses and load shedding from the emergency buses.
- (2) The diesel starts from ambient condition on the auto-start signal, energizes the emergency buses with permanently connected loads, energizes the auto-connected emergency loads

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

3.9.A.1.c.(3) (Cont'd)

NOTES FOR (2) AND (3):

If both Athens and Trinity lines are claimed as the two offsite sources for unit 3, no credit may be taken for the Athens-Trinity line tie breaker. Specifically, the Athens line supplies unit 3 through common station-service transformer A or cooling tower transformer 1, and the Trinity line must supply unit 3 through common station-service transformer B or cooling tower transformer 2.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.1.b. (Cont'd)

through load sequencing, and operates for greater than or equal to five minutes while its generator is loaded with the emergency loads.

(3) On diesel generator breaker trip, the loads are shed from the emergency buses and the diesel output breaker closes on the auto-start signal, the emergency buses are energized with permanently connected loads, the auto-connected emergency loads are energized through load sequencing, and the diesel operates for greater than or equal to five minutes while its generator is loaded with the emergency loads.

- c. Once a month the quantity of diesel fuel available shall be logged.
- d. Each diesel generator shall be given an annual inspection in accordance with instructions based on the manufacturer's recommendations.
- e. Quarterly the quality of each diesel generator's (3A, 3B, 3C, and 3D) seven-day fuel load supply shall be checked. The fuel oil quality shall be within the acceptable limits specified in Table 1 of ASTM-D975-89.

3.9/4.9 AUXILIAL ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.A. Auxiliary Electrical Equipment

2. The reactor shall not be started up (made critical) from the HOT STANDBY CONDITION unless all of the following conditions are satisfied:

a. At least one offsite power source is available as specified in 3.9.A.1.c.

b. Three units 3 diesel generators shall be OPERABLE.

c. An additional source of power consisting of one of the following:

(1) A second offsite power source available as specified in 3.9.A.1.c.

(2) A fourth unit 3 diesel generator OPERABLE.

d. Requirements 3.9.A.3 through 3.9.A.6 are met.

4.9.A. Auxiliary Electrical System

2. DC Power System - Unit Batteries (250-V), Diesel-Generator Batteries (125-V) and Shutdown Board Batteries (250-V)

a. Every week the specific gravity, voltage, and temperature of the pilot cell, and overall battery voltage shall be measured and logged.

b. Every three months the measurements shall be made of voltage of each cell to nearest 0.1 volt, specific gravity of each cell, and temperature of every fifth cell. These measurements shall be logged.

c. At least once every 24 months, a battery rated discharge (capacity) test shall be performed and the voltage, time, and output current measurements shall be logged.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.A. Auxiliary Electrical Equipment

5. Accident signal logic system is OPERABLE.

6. There shall be a minimum of 35,280 gallons of diesel fuel in each of the 7-day diesel-generator fuel tank assemblies.

SURVEILLANCE REQUIREMENTS

4.9.A. Auxiliary Electrical System

4.9.A.4. (Cont'd)

c. The loss of voltage and degraded voltage relays which start the diesel generators from the 4-kV shutdown boards shall be calibrated annually for trip and reset and the measurements logged. These relays shall be calibrated as specified in Table 4.9.A.4.c.

d. 4-kV shutdown board voltages shall be recorded once every 12 hours.

5. 480-V RMOV Boards 3D and 3E

a. Once per operating cycle, the automatic transfer feature for 480-V RMOV boards 3D and 3E shall be functionally tested to verify auto-transfer capability.

3.9/4.9 AUXILIARY ELECTRICAL SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.9.B. Operation with Inoperable Equipment

Whenever the reactor is in STARTUP mode or RUN mode and not in a Cold Condition, the availability of electric power shall be as specified in 3.9.A except as specified herein.

1. From and after the date that only one offsite power source is available, reactor operation is permissible under this condition for seven days.
2. When one unit 3 diesel generator (3A, 3B, 3C, or 3D) is inoperable, continued reactor operation is permissible during the succeeding 7 days, provided that two offsite power sources are available as specified in 3.9.A.1.c. and all of the CS, RHR (LPCI and containment cooling) systems, and the remaining three unit 3 diesel generators are OPERABLE. If this requirement cannot be met, an orderly shutdown shall be initiated and the reactor shall be shut down and in the Cold Condition within 24 hours.

SURVEILLANCE REQUIREMENTS

4.9.B. Operation with Inoperable Equipment

1. When only one offsite power source is OPERABLE, all unit 3 diesel generators must be demonstrated to be OPERABLE within 24 hours, and power availability for the associated boards shall be verified within 1 hour and at least once per 8 hours thereafter.
2. When one unit 3 diesel generator is found to be inoperable, all of the remaining unit 3 diesel generators shall be demonstrated to be OPERABLE within 24 hours, and power availability for the associated boards shall be verified within 1 hour and at least once per 8 hours thereafter.

3.9 BASES

The objective of this specification is to assure an adequate source of electrical power to operate facilities to cool the unit during shutdown and to operate the engineered safeguards following an accident. There are three sources of alternating current electrical energy available, namely, the 161-kV transmission system, the 500-kV transmission system, and the diesel generators.

The unit station-service transformer B for unit 3 provides a noninterruptible source of offsite power from the 500-kV transmission system to the unit 3 shutdown boards. Auxiliary power can also be supplied from the 161-kV transmission system through the common station-service transformers or through the cooling tower transformers by way of the bus tie board. The 4-kV bus tie board may remain out of service indefinitely provided one of the required offsite power sources is not supplied from the 161-kV system through the bus tie board.

The minimum fuel oil requirement of 35,280 gallons for each diesel generator fuel tank assembly is sufficient for seven days of full load operation of each diesel and is conservatively based on availability of a replenishment supply. Each diesel generator has its own independent 7-day fuel oil storage tank assembly.

The degraded voltage sensing relays provide a start signal to the diesel generators in the event that a deteriorated voltage condition exists on a 4-kV shutdown board. This starting signal is independent of the starting signal generated by the complete loss of voltage relays and will continue to function and start the diesel generators on complete loss of voltage should the loss of voltage relays become inoperable. The 15-day inoperable time limit specified when one of the three phase-to-phase degraded voltage relays is inoperable is justified based on the two-out-of-three permissive logic scheme provided with these relays.

A 4-kV shutdown board is allowed to be out of operation for a brief period to allow for maintenance and testing, provided all remaining 4-kV shutdown boards and associated diesel generators, CS, RHR, (LPCI and containment cooling) systems supplied by the remaining 4-kV shutdown boards, and all emergency 480-V power boards are operable.

The 480-V diesel auxiliary board may be out of service for short periods for tests and maintenance. There are five 250-V dc battery systems associated with unit 3, each of which consists of a battery, battery charger, and distribution equipment. Three of these systems provide power for unit control functions, operative power for unit motor loads, and alternative drive power for a 115-V ac unit-preferred mg set. One 250-V dc system provides power for common plant and transmission system control functions, drive power for a 115-V ac plant-preferred mg set, and emergency drive power for certain unit large motor loads. The fifth battery system delivers control power to a 4-kV shutdown board.

3.9 BASES (Cont'd)

The 250-V dc system is so arranged and the batteries sized so that the loss of any one unit battery will not prevent the safe shutdown and cooldown of all three units in the event of the loss of offsite power and a design basis accident in any one unit. Loss of control power to any engineered safeguard control circuits is annunciated in the main control room of the unit affected.

The station battery supplies loads that are not essential for safe shutdown and cooldown of the nuclear system. This battery was not considered in the accident load calculations.

There are two 480-V ac RMOV boards that contain mg sets in their feeder lines. These 480-V ac RMOV boards have an automatic transfer from their normal to alternate power source (480-V ac shutdown boards). The mg sets act as electrical isolators to prevent a fault from propagating between electrical divisions due to an automatic transfer. The 480-V ac RMOV boards involved provide motive power to valves associated with the LPCI mode of the RHR system. Having an mg set out of service reduces the assurance that full RHR (LPCI) capacity will be available when required. Since sufficient equipment is available to maintain the minimum complement required for RHR (LPCI) operation, a 7-day servicing period is justified. Having two mg sets out of service can considerably reduce equipment availability; therefore, the affected unit shall be placed in Cold Shutdown within 24 hours.

The offsite power source requirements are based on the capacity of the respective lines. The Trinity line is limited to supplying two operating units because of the load limitations of CSST's A and B. The Athens line is limited to supplying one operating unit because of the load limitations of the Athens line. The limiting conditions are intended to prevent the 161-kV system from supplying more than two units in the event of a single failure in the offsite power system.

Specification 3.9.D provides the operability requirements for the Unit 3 diesel generators when they serve as emergency power supplies to standby gas treatment train C and control room emergency ventilation train B when they are being considered operable for Unit 2 technical specifications. The allowable out of service time of 30 days is commensurate with the importance of the affected systems when Unit 3 is in cold shutdown, the low probability of a LOCA/Loss of offsite power and availability of onsite power to redundant trains.

4.9 BASES (Cont'd)

The monthly tests of the diesel generators are primarily to check for failures and deterioration in the system since last use. The diesels will be loaded to at least 100 percent of its continuous rating (i.e. \geq 2600 KW) while engine and generator temperatures are stabilized (about one hour). A minimum 75-percent load will prevent soot formation in the cylinders and injection nozzles. Operation up to an equilibrium temperature ensures that there is no overheating problem. The tests also provide an engine and generator operating history to be compared with subsequent engine-generator test data to identify and to correct any mechanical or electrical deficiency before it can result in a system failure.

Diesel testing once per 18 months (i.e., at least once per fuel cycle) at a minimum load of 2800 KW for an interval of not less than 24 hours assures that each diesel generator will be capable of supplying the maximum load during the first 2 hours of a loss of offsite power/loss of coolant accident. This test also demonstrates each diesel generator's long-term load carrying capability.

The test during refueling outages is more comprehensive, including procedures that are most effectively conducted at that time. These include automatic actuation and functional capability tests to verify that the generators can start and be ready to assume load in 10 seconds. The annual inspection will detect any signs of wear long before failure.

BFN tests the 7-day diesel generator fuel oil supplies in accordance with Table 1 of ASTM-D975-89. Each fuel oil supply is tested quarterly.

Battery maintenance with regard to the floating charge, equalizing charge, and electrolyte level will be based on the manufacturer's instruction and sound maintenance practices. In addition, written records will be maintained of the battery performance. The plant batteries will deteriorate with time but precipitous failure is unlikely. The type of surveillance called for in this specification is that which has been demonstrated through experience to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

The equalizing charge, as recommended by the manufacturer, is vital to maintaining the ampere-hour capacity of the battery and will be applied as recommended.

The testing of the logic system will verify the ability of the logic systems to bring the auxiliary electrical system to running standby readiness with the presence of an accident signal from any reactor or an undervoltage signal on the start buses or 4-kV shutdown boards.

The periodic simulation of accident signals in conjunction with diesel generator voltage available signals will confirm the ability of the 480-V load shedding logic system to sequentially shed and restart 480-V loads if an accident signal were present and diesel generator voltage were the only source of electrical power.

4.9 BASES (Cont'd)

Specification 4.9.D provides surveillance requirements for Unit 3 diesel generators for the purpose of satisfying Specification 3.9.D. It contains less stringent testing requirements for the Unit 3 diesel generators when they are only being used to support Unit 2 equipment.

References

1. Normal Auxiliary Power System (BFNP FSAR Subsection 8.4)
2. Standby AC Power Supply and Distribution (BFNP FSAR Subsection 8.5)
3. 250-V DC Power Supply and Distribution (BFNP FSAR Subsection 8.6)
4. Memorandum from G. M. Wilhoite to H. J. Green dated December 4, 1981 (LOO 811208 664) and memorandum from C. E. Winn to H. J. Green dated January 10, 1983 (G02 830112 002)



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

ENCLOSURE 4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 181 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 191 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 153 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3

DOCKET NOS. 50-259, 50-260 AND 50-296

1.0 INTRODUCTION

By letters dated January 31, March 20, May 14, and December 28, 1990, the Tennessee Valley Authority (TVA, or the licensee) requested changes to Sections 3.9 and 4.9, Auxiliary Electrical System, of the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, Technical Specifications (TSs). The changes would (1) clarify Limiting Condition for Operation (LCO) 3.9.A.1, (2) more accurately describe the 7-day fuel oil requirements for the diesel generators in LCO 3.9.A.6, (3) revise the requirements for sampling the diesel generator fuel oil in Surveillance Requirements (SR) 4.9.A.1.e, and (4) update the testing of diesel generators in SR 4.9.A.1.a. Changes were also proposed for the TS Bases of Section 3.9/4.9.

The licensee's March 20, 1990, letter provided the description, justification, and determination of no significant hazards consideration for the submittal dated January 31, 1990. The May 14, 1990, letter provided minor revisions to the proposed changes in the submittal dated January 31, 1990, as a result of the staff's review of this submittal. These minor revisions are the following: (1) LCO 3.9.A.1 is revised to capitalize "PRIOR TO STARTUP"; (2) Bases Section 4.9 and page 3 of the Description and Justification for the Proposed Change are revised to indicate that diesel generator fuel oil is tested in accordance with Table 1 of ASTM-D975-89; (3) Overleaf page 3.9/4.9-2 for Unit 1 is revised because the page originally submitted had Unit 3 information on it; and (4) Bases page 3.9/4.9-30 for Unit 3 is revised to page number 3.9/4.9-20.

The December 28, 1990, letter provided a minor revision to the changes for SR 4.9.A.1.e proposed in the submittals dated January 31 and May 14, 1990. TVA proposed that ASTM-D975 specified in the SR be revised to indicate the applicable revision year, i.e., ASTM-D975-89. The letter also provided a new basis for the 7-day fuel oil requirement for the diesel generators in LCO 3.9.A.6 and agreed that the proposed TS changes proposed in this application for amendments may be made effective 30 days after issuance.

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The Notice of Consideration of Issuance of Amendments for the above proposed changes to the TSs in the Federal Register (55 FR 30313) was issued on July 25, 1990 listing only the first three submittals. In that notice, the proposed change to clarify LCO 3.9.A.1 and the minor revision to SR 4.9.A.1.e in the letter of December 28, 1990 were not listed in the description of the amendment request. The change and minor revision to LCO 3.9.A.1 and SR 4.9.A.1.e, respectively, are clearly described in the first three submittals and in TVA's proposed determination of no significant hazards consideration published in the notice. Therefore, the inclusion of these proposed changes for LCO 3.9.A.1 and SR 4.9.A.1.e does not change the staff's initial determination of no significant hazards consideration published in the Federal Register.

2.0 EVALUATION

The proposed changes to the TSs listed in Section 1.0 are evaluated separately in the following sections:

2.1 LCO 3.9.A.1 Clarification

TVA proposed changes to the TSs of all three units to state that "PRIOR TO STARTUP from a COLD CONDITION, the following must be satisfied." TVA stated that these changes are to clarify the existing LCO 3.9.A.1 and make the wording consistent with the approved BFN Amendment 158 for Unit 1, 154 for Unit 2, and 129 for Unit 3.

Amendments 158, 154, and 129 were issued on November 18, 1988, and January 13, 1989. The amendments modified the TS by (1) changing the definitions of Mode of Operation, Core Alteration, and Reactor Conditions in Section 1.0, Definitions, of the TSs and (2) incorporating these newly defined terms in LCOs throughout the TSs (e.g., the LCO for core spray system, residual heat removal system, high pressure coolant injection system). TVA is proposing to revise an LCO for auxiliary electrical systems to incorporate the new, defined terms in the LCO. "Prior to startup" and "cold shutdown" will be capitalized in the new LCO because they are terms defined in Section 1.0 of the TSs.

The proposed changes to LCO 3.9.A.1 will not allow any physical operating condition of the units to be different from those allowed by the current TSs. The proposed new wording for the LCO has the same meaning as the current LCO. Therefore, the staff concludes that this change is acceptable.

2.2 Seven Day Fuel Oil Storage

At BFN, there are two sets of four diesel generators. The four diesel generators for Units 1 and 2 are numbered 1/2A, 1/2B, 1/2C, and 1/2D and the four Unit 3 diesel generators are numbered 3A, 3B, 3C, and 3D. Some electrical loads from Units 1 and 2 are carried by the Unit 3 diesel generators, and vice versa. The diesel generators, 7-day fuel oil storage tank assemblies, the fuel oil transfer system, and the yard tanks, are shown in Figures 8.5.3a and 8.5.3b of the BFN Final Safety Analysis Report (FSAR).

Each diesel generator has its own 7-day fuel oil storage tank assembly of three separate tanks. The three tanks are embedded in concrete in the substructure of the diesel generator building and are in parallel with all the tanks sloped from one end to the other. There are two common lines connecting the tanks, one at the bottom of the lower end of the tanks and one at the top of the upper end of the tanks. The upper common line is a vent line. Fuel oil is added to the assembly through one of the outer tanks and is drawn from the middle tank into a diesel generator day tank. There are two separate lines to the day tank from the middle tank, each of which enter the top of the middle tank near the lower end of the tank and drop down within about two inches of the bottom of the middle tank. As such, a quantity of fuel oil will remain which cannot be drawn from the tanks. To draw a sample of fuel oil from the assembly, the fuel transfer pump recirculates oil into one of the outer tanks and from the middle tank for at least three minutes. The sample is taken from the fuel transfer pump. The diesel fuel oil transfer system has the capability to transfer fuel oil (1) from the yard tanks to the 7-day tank assemblies and (2) among the 7-day tank assemblies for a set of diesel generators; however, this transfer system is not seismically qualified. Therefore, each fuel oil storage tank assembly for a diesel generator is designed to contain sufficient fuel oil to operate the diesel generator for seven days. The staff concludes that the NRC Regulations do not require that the diesel fuel oil transfer system be seismically qualified. There is also a connection to add fuel oil to the 7-day tank assemblies directly from a fuel tanker truck.

TVA is proposing to increase the 7-day fuel oil supply for each diesel generator. The staff considers seven days an adequate fuel-oil storage supply for a diesel generator because it is consistent with the guidelines of Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators." TVA presented its calculation of the 7-day supply in letters dated March 20, May 14, and December 28, 1990. The letter dated December 28, 1990 addressed the unusable volume of oil in the 7-day fuel tank assemblies and will be addressed in this evaluation.

Regulatory Guide 1.137 allows the calculation of the 7-day fuel oil storage requirement for a diesel generator assuming it operates continuously for seven days at its rated capacity. In calculating the fuel oil requirement, a 205 gallon per hour (gph) consumption rate was used by TVA for the entire 7-day period and the 640 gallons of fuel oil that cannot be drawn from a tank assembly was taken into account. TVA stated that the consumption rate of 205 gph corresponds to a load of 2850 KW and conservatively bounds the fuel consumption requirements for the maximum running load of 2778 KW documented in the BFN Diesel Generator Evaluation Report. The zero-to-two-hours and greater-than-two-hour ratings for the diesel generators are 2800 KW and 2550 KW, respectively, as stated in Section 2.4 below.

TVA stated that to supply 205 gph of diesel fuel oil to the diesel engine for seven days of operation, each 7-day tank assembly has to contain at least 35,280 gallons of diesel fuel oil. This required volume is less than the useable volume capacity for each 7-day tank assembly. Adequate level indication is available to verify that the required fuel oil level is maintained. In addition, TVA stated that an annunciator in the control room will indicate to the operator that the 7-day tank assembly level is low and plant procedures provide instructions on replenishing the fuel oil supply.

The current requirement in LCO 3.9.A.6 is that there shall be a minimum of 103,300 gallons of diesel fuel in the diesel generator fuel tanks. TVA stated that this implies that there is one large fuel storage tank for each set of diesel generators and that this tank is required to contain a minimum of 103,300 gallons of diesel fuel. This 103,300 gallons per diesel generator set would be 25,825 gallons per diesel generator.

To clarify LCO 3.9.A.6, TVA has proposed to state in the LCO that 35,280 gallons is the minimum quantity of diesel fuel in the 7-day fuel tank assembly for each diesel generator. Given the fact that each diesel generator has its own 7-day fuel tank assembly, the proposed rewriting of LCO 3.9.A.6 is clearer than the existing requirement. The proposed LCO 3.9.A.6 specifies the minimum amount of diesel fuel in each of the 7-day diesel generator fuel tank assemblies while the current LCO has a confusing reference to the diesel generator "fuel tanks."

TVA has proposed 35,280 gallons as the required minimum quantity of fuel oil in the 7-day tank assemblies based on the calculation described above. This calculation assumes the diesel generator may run continuously at 2850 KW for the seven days and accounts for the unusable quantity of oil in the tank assemblies. The 2850 KW is above the continuous rating of 2550 KW, the maximum two-hour load of 2800 KW, and the maximum Loss-of-Power/Loss-of-Coolant Accident (LOP/LOCA) load of 2778 KW for the diesel generators. This calculation is an acceptable method to estimate the minimum fuel required for a diesel generator and 35,280 gallons is greater than the volume based on the unusable volume and the fuel consumption rate. Therefore, the staff concludes that the proposed changes to LCO 3.9.A.6, to increase the amount of diesel fuel required in the 7-day fuel oil tank assembly for each diesel generator to 35,280 gallons, is acceptable.

The changes to the Bases of TS Section 3.9/4.9 associated with the proposed changes to LCO 3.9.A.6 are correct and consistent with the changes to LCO 3.9.A.6; therefore, the proposed changes are acceptable.

2.3 Sampling Diesel Generator Fuel Oil

TVA stated that the proposed changes to SR 4.9.A.1.e are to clarify the existing requirements to sample the quality of diesel fuel for the diesel generators. TVA had originally interpreted the SR as meaning to sample the fuel oil in one 7-day fuel tank assembly each month and to sample the eight 7-day fuel tank assemblies on a staggered basis. Therefore, each assembly would be sampled only once every eight months, which is less restrictive than in the NRC Standard Technical Specifications for General Electric Boiling Water Reactors (BWRSTS), NUREG-0123, Revision 4. TVA has recently reinterpreted this SR and has concluded that every assembly should be sampled once a month, which is more restrictive than the BWRSTS. This is discussed in License Event Report 89-026-01 dated December 12, 1989 for Unit 1. To clarify this situation, TVA has proposed new requirements on sampling the diesel generator 7-day fuel oil supply.

TVA has proposed to sample the quality of the fuel in each diesel generator 7-day fuel supply once a quarter. The 7-day fuel supply is the 7-day diesel generator fuel tank assembly for each diesel generator discussed above. This

frequency and fuel supply for the diesel generators is consistent with the requirements in the NRC BWRSTS. BFN is a GE BWR and the BWRSTS on diesel generators are applicable to the BFN TS.

A description of the means to sample fuel oil from a 7-day fuel oil storage tank assembly is given in Section 2.2 above. It is not possible to take a sample from an individual tank of a 3-tank assembly except by opening a manway into a tank. A tank cannot be drained completely, including the inaccessible volume at the bottom of each tank, except by opening a manway into the tank.

These proposed requirements for the Unit 1 and Unit 2 TSs will cover the Unit 1/Unit 2 diesel generators and these proposed requirements for the Unit 3 TS will cover the Unit 3 diesel generators. The proposed wording is clearer in stating the requirements; as in the BWRSTS, that the fuel oil in the 7-day storage tanks for each diesel generator be sampled once per 92 days. Therefore, the staff concludes that this proposed change is acceptable.

TVA has also proposed to revise the current requirements in SR 4.9.A.1.e to state that the quality of the fuel oil shall be within the acceptable limits specified in Table 1 of ASTM-D975-89. The standard and table in the SR are not being changed by the proposed TS changes. TVA has proposed to (1) delete the reference to "the latest revision to" the standard and (2) state that the fuel oil would be tested in accordance with the 1989 revision of the standard.

TVA has reformatted the wording in the sentence concerning the latest revision to ASTM-D975. The latest revision to the standard is ASTM-D975-1989 as proposed by TVA. This rewording does not change the requirement in the SR that the quality of the fuel oil must meet the acceptance limits in Table 1 of the standard; therefore, the staff concludes that the reworded sentence is acceptable. TVA has also proposed to delete the requirement to "log" the fact the fuel oil meets Table 1 of the standard. The staff concludes that this is acceptable because it is not necessary to state in the SR that the results are logged.

The proposed changes to the TS Bases are correct and consistent with the proposed changes to SR 4.9.A.1.e. Therefore, the staff concludes that these proposed changes to the bases are acceptable.

In reviewing the BWRSTS, the staff determined that there were several additional requirements in the BWRSTS on maintaining the quality of the diesel fuel that are not in the BFN TSs. These include the following: (1) removing water periodically from the tanks, (2) testing new fuel oil prior to its addition to the 7-day fuel storage tanks, (3) sampling the fuel oil from the 7-day fuel storage tanks in accordance with ASTM-D270-1975. TVA has stated that it draws the sample of fuel oil from the bottom of the middle tank of the three tank 7-day fuel tank assembly for a diesel generator as fuel oil is pumped into the diesel generator day tank. The diesel generators for operation draw fuel oil from the day tank and not from the 7-day fuel tanks. The staff will request that TVA review Section 4.9 of the TS against the BWRSTS in this area, to determine if additional TS requirements are needed to assure the high quality of the fuel oil and the operation of the diesel generators.

2.4 Diesel Generator Testing

In the staff's Safety Evaluation (SE) dated December 21, 1989, the staff evaluated the diesel generator load analysis and concluded that the current SR 4.9.A.1.a did not test the diesel generators at a load of 2778 KW for two hours (i.e., load simulation for a Loss of Offsite Power (LOP) concurrent with a Loss of Coolant Accident (LOCA)). The current SR 4.9.A.1.a specifies that the diesel generators be tested for at least one hour at 75 percent or greater of rated load but requires no long duration testing (i.e., 24-hour testing). The SE states that the zero-to-two hours and greater-than-two-hours ratings for the diesel generators are 2800 KW and 2550 KW, respectively.

TVA has proposed to increase the testing to the following: (1) at least one hour at 100 percent or greater of the continuous rating of the diesel generators and (2) at least 24 hours at a minimum of 2800 KW to demonstrate full load carrying capability. The first test will be done at the frequency specified in Table 4.9.A which is the frequency in the current SR 4.9.A.1.a. The second test is a new one which will be done once per 18 months. The interval of 18 months is in agreement with the frequency for the testing of diesel generators specified in the BWRSTS.

Although TVA has proposed testing the diesel generators at 2800 KW for the entire 24 hours, this testing, which is more conservative than requested by the staff in its SE dated December 21, 1989, is for TVA's convenience in not reducing the load during the test to match the LOP/LOCA load and will not harm the diesel generator. The 2800 KW is above the LOP/LOCA load of 2778 KW and the frequency of testing is consistent with the BWRSTS requirements on such testing.

Based on the above, the staff concludes that the proposed changes to SR 4.9.A.1.a are acceptable and address the concerns raised in the SE dated December 21, 1989.

2.5 Conclusion

Based on the evaluations discussed in Sections 2.1 to 2.4 above, the staff concludes that the proposed changes are acceptable. The staff will request that TVA review the TS against the BWRSTS to determine if additional requirements on the quality of the diesel fuel are needed.

3.0 ENVIRONMENTAL CONSIDERATIONS

The amendments involve a change to a requirement with respect use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of these amendments.

4.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (55 FR 30313) on July 25, 1990, and consulted with the State of Alabama. No public comments were received and the State of Alabama did not have any comments.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: J. Donohew

Dated: February 12, 1991