March 30, 1990

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:

SUBJECT: REVISION TO TECHNICAL SPECIFICATIONS PERTAINING TO LIMITING CONDITIONS FOR OPERATION AND BASES 3.7/4.7 CONTAINMENT SYSTEMS (TAC 76096, 76097 AND 76098) - BROWNS FERRY NUCLEAR PLANTS, UNITS 1, 2, AND 3

The Commission has issued the enclosed Amendment Nos. 174, 177, and 145 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 application dated March 6, 1990. This amendment will clarify the actions to be taken in Limiting Conditions of Operations (LCO) 3.7.B.4 (Standby Gas Treatment System) and revise the bases accordingly; revise the requirements of LCO 3.7.C.2 (Secondary Containment); add a clarifying statement to LCO 3.7.C.4.b (Secondary Containment); and delete the remaining portion of Amendments 151, 147, and 122 for Browns Ferry, Units 1, 2 and 3, respectively.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 174 to License No. DPR-33
2. Amendment No. 177 to License No. DPR-52
3. Amendment No. 145 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page
*SEE PREVIOUS CONCURRENCE

9004120115 900330
PDR ADOCK 05000259
P PDC

OFC	:NRR:TVA/PM*	:NRR:TVA/PM*	OGC*	:TVA:AD/P	:	:	:
NAME	:DMoran:as	:TRoss	:	SBlack	:	:	:
DATE	:3/23/90	: 3/27/90	: 3/27/90	:3/30/90	:	:	:

OFFICIAL RECORD COPY

March 30, 1990

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:

SUBJECT: REVISION TO TECHNICAL SPECIFICATIONS PERTAINING TO LIMITING CONDITIONS FOR OPERATION AND BASES 3.7/4.7 CONTAINMENT SYSTEMS (TAC M76098) ~~(TS 276)~~ - BROWNS FERRY NUCLEAR PLANTS, UNITS 1, 2, AND 3

The Commission has issued the enclosed Amendment Nos. 174, 177, and 145 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 application dated March 6, 1990. This amendment will clarify the actions to be taken in Limiting Conditions of Operations (LCO) 3.7.B.4 (Standby Gas Treatment System) and revise bases accordingly; revise the requirements of LCO 3.7.C.2 (Secondary Containment); add a clarifying statement to LCO 3.7.C.4.b (Secondary Containment); and delete the remaining portion of Amendments 151, 147, and 122 for Browns Ferry, Units 1, 2 and 3, respectively.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 174 to License No. DPR-33
2. Amendment No. 177 to License No. DPR-52
3. Amendment No. 145 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page

Concurrence as to form only. OGC does not agree with exigency determination.

OFC	:NRR:TVA/PM	:OGC	:TVA:AD/P	:NRR:TVA/PM	:	:
NAME	:DMoran:as	: BMP	:SBlack	:T. Ross	:	:
DATE	:3/23/90	:3/27/90	: / /90	:3/27/90	:	:

OFFICIAL RECORD COPY
Document Name: TS 276

Docket

AMENDMENT NO. 174 FOR BROWNS FERRY UNIT 1 - DOCKET NO. 50-259,
AMENDMENT NO. 177 FOR BROWNS FERRY UNIT 2 - DOCKET NO. 50-260, and
AMENDMENT NO. 145 FOR BROWNS FERRY UNIT 3 - DOCKET NO. 50-296
Dated: March 30, 1999

DISTRIBUTION: Docket File
NRC PDR
Local PDR
BFN Reading
ADSP Reading
DCrutchfield
BDLiaw
SBlack
Licensing Assistant
TRoss
DMoran
RPierson
BWilson, Region II
WLittle, Region II
BGrimes (9-A-2)
EJordan (MNBB-3701)
DHagan (MNBB-3206)
TMeek (12) (P1-37)
WJones (P-522)
JCalvo (11-F-23)
ACRS (10) (P-315)
GPA/PA (2-G-5)
GPA/CA (17-A-3)
ARM/LFMB (MNBB-4503)
OGC (15-B-18)
PHearn

cc:
General Counsel
Tennessee Valley Authority
400 West Summit Hill Drive
ET 11B 33H
Knoxville, Tennessee 37902

Mr. F. L. Moreadith
Vice President, Nuclear Engineering
Tennessee Valley Authority
400 West Summit Hill Drive
WT 12A 12A
Knoxville, Tennessee 37902

Dr. Mark O. Medford
Vice President and Nuclear
Technical Director
Tennessee Valley Authority
6N 38A Lookout Place
Chattanooga, Tennessee 37402-2801

Mr. Edward G. Wallace
Manager, Nuclear Licensing
and Regulatory Affairs
Tennessee Valley Authority
5N 157B Lookout Place
Chattanooga, Tennessee 37402-2801

Mr. O. J. Zeringue
Site Director
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P. O. Box 2000
Decatur, Alabama 35602

Mr. P. Carier
Site Licensing Manager
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P. O. Box 2000
Decatur, Alabama 35602

Mr. L. W. Myers
Plant Manager
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P. O. Box 2000
Decatur, Alabama 35602

Chairman, Limestone County Commission
P. O. Box 188
Athens, Alabama 35611

Claude Earl Fox, M.D.
State Health Officer
State Department of Public Health
State Office Building
Montgomery, Alabama 36130

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Atlanta, Georgia 30323

Mr. Danny Carpenter
Senior Resident Inspector
Browns Ferry Nuclear Plant
U.S. Nuclear Regulatory Commission
Route 12, Box 637
Athens, Alabama 35611

Dr. Henry Myers, Science Advisor
Committee on Interior
and Insular Affairs
U.S. House of Representatives
Washington, D.C. 20515

Tennessee Valley Authority
Rockville Office
11921 Rockville Pike
Suite 402
Rockville, Maryland 20852

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. 174
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 March 6, 1990, 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 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. 174, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Jack N. Donohew Jr. for
Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 30, 1990

ATTACHMENT TO LICENSE AMENDMENT NO.174

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* and overflow** pages are provided to maintain document completeness.

REMOVE	INSERT
3.7/4.7-13	3.7/4.7-13
3.7/4.7-14	3.7/4.7-14*
3.7/4.7-15	3.7/4.7-15
3.7/4.7-16	3.7/4.7-16
3.7/4.7-17	3.7/4.7-17
3.7/4.7-18	3.7/4.7-18*
3.7/4.7-47	3.7/4.7-47
3.7/4.7-48	3.7/4.7-48
3.7/4.7-49	3.7/4.7-49**
3.7/4.7-50	3.7/4.7-50**
3.7/4.7-51	3.7/4.7-51**
3.7/4.7-52	3.7/4.7-52**
3.7/4.7-53	3.7/4.7-53**
	3.7/4.7-53a**

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.B. Standby Gas Treatment System	4.7.B. Standby Gas Treatment System
1. Except as specified in Specification 3.7.B.3 below, all three trains of the standby gas treatment system shall be OPERABLE at all times when secondary containment integrity is required.	1. At least once per year, the following conditions shall be demonstrated. a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at a flow of 9000 cfm (± 10%). b. The inlet heaters on each circuit are tested in accordance with ANSI N510-1975, and are capable of an output of at least 40 kW. c. Air distribution is uniform within 20% across HEPA filters and charcoal adsorbers.

LIMITING CONDITIONS FOR OPERATION

3.7.B. Standby Gas Treatment System

2. a. The results of the in-place cold DOP and halogenated hydrocarbon tests at ≥ 10% design flow on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal when tested in accordance with ANSI N510-1975.

b. The results of laboratory carbon sample analysis shall show ≥90% radioactive methyl iodide removal when tested in accordance with ASTM D3803 (130°C, 95% R.H.).

c. System shall be shown to operate within ±10% design flow.

SURVEILLANCE REQUIREMENTS

4.7.B. Standby Gas Treatment System

2. a. The tests and sample analysis of Specification 3.7.B.2 shall be performed at least once per operating cycle or once every 18 months whichever occurs first for standby service or after every 720 hours of system operation and following significant painting, fire, or chemical release in any ventilation zone communicating with the system.

b. Cold DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.B. Standby Gas Treatment System	4.7.B. Standby Gas Treatment System
	4.7.B.2 (Cont'd)
	d. Each train shall be operated a total of at least 10 hours every month.
	e. Test sealing of gaskets for housing doors shall be performed utilizing chemical smoke generators during each test performed for compliance with Specification 4.7.B.2.a and Specification 3.7.B.2.a.
3. From and after the date that one train of the standby gas treatment system is made or found to be inoperable for any reason, REACTOR POWER OPERATION and fuel handling is permissible only during the succeeding 7 days unless such circuit is sooner made OPERABLE, provided that during such 7 days all active components of the other two standby gas treatment trains shall be operable.	3. a. Once per operating cycle automatic initiation of each branch of the standby gas treatment system shall be demonstrated from each unit's controls.
	b. At least once per year manual operability of the bypass valve for filter cooling shall be demonstrated.
	c. When one train of the standby gas treatment system becomes inoperable the other two trains shall be demonstrated to be OPERABLE within 2 hours and daily thereafter.
4. If these conditions cannot be met:	
a. Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.B. Standby Gas Treatment System	4.7.B. Standby Gas Treatment System
3.7.B.4 (Cont'd) b. Place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours.	
3.7.C. Secondary Containment	4.7.C. Secondary Containment
1. Secondary containment integrity shall be maintained in the reactor zone at all times except as specified in 3.7.C.2.	1. Secondary containment surveillance shall be performed as indicated below: a. Secondary containment capability to maintain 1/4 inch of water vacuum under calm wind (< 5 mph) conditions with a system leakage rate of not more than 12,000 cfm, shall be demonstrated at each refueling outage prior to refueling.
2. If reactor zone secondary containment integrity cannot be maintained the following conditions shall be met: a. Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel. b. Restore reactor zone secondary containment integrity within 4 hours, or place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours.	2. After a secondary containment violation is determined, the standby gas treatment system will be operated immediately after the affected zones are isolated from the remainder of the secondary containment to confirm its ability to maintain the remainder of the secondary containment at 1/4-inch of water negative pressure under calm wind conditions.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS

3.7.C. Secondary Containment

3. Secondary containment integrity shall be maintained in the refueling zone, except as specified in 3.7.C.4.

4. If refueling zone secondary containment cannot be maintained the following conditions shall be met:

   a. Handling of spent fuel and all operations over spent fuel pools and open reactor wells containing fuel shall be prohibited.

   b. The standby gas treatment system suction to the refueling zone will be blocked except for a controlled leakage area sized to assure the achieving of a vacuum of at least 1/4-inch of water and not over 3 inches of water in all three reactor zones. This is only applicable if reactor zone integrity is required.

D. Primary Containment Isolation Valves

1. When Primary Containment Integrity is required, all isolation valves listed in Table 3.7.A and all reactor coolant system instrument line flow check valves shall be OPERABLE except as specified in 3.7.D.2.

D. Primary Containment Isolation Valves

1. The primary containment isolation valves surveillance shall be performed as follows:

   a. At least once per operating cycle, the OPERABLE isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and in accordance with Specification 1.0.MM, tested for closure times.

LIMITING CONDITIONS FOR OPERATION

3.7.D. Primary Containment Isolation Valves

2. In the event any isolation valve specified in Table 3.7.A becomes inoperable, reactor operation may continue provided at least one valve, in each line having an inoperable valve, is OPERABLE and within 4 hours either:

   a. The inoperable valve is restored to OPERABLE status, or

   b. Each affected line is isolated by use of at least one deactivated containment isolation valve secured in the isolated position.

3. If Specification 3.7.D.1 and 3.7.D.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the COLD SHUTDOWN CONDITION within 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.D. Primary Containment Isolation Valves

4.7.D.1 (Cont'd)

   b. In accordance with Specification 1.0.MM, all normally open power operated isolation valves shall be functionally tested.

   c. (Deleted)

   d. At least once per operating cycle the operability of the reactor coolant system instrument line flow check valves shall be verified.

2. Whenever an isolation valve listed in Table 3.7.A is inoperable, the position of at least one other valve in each line having an inoperable valve shall be recorded daily.

The primary containment leak rate test frequency is based on maintaining adequate assurance that the leak rate remains within the specification. The leak rate test frequency is based on the NRC guide for developing leak rate testing and surveillance of reactor containment vessels. Allowing the test intervals to be extended up to 10 months permits some flexibility needed to have the tests coincide with scheduled or unscheduled shutdown periods.

The penetration and air purge piping leakage test frequency, along with the containment leak rate tests, is adequate to allow detection of leakage trends. Whenever a bolted double-gasketed penetration is broken and remade, the space between the gaskets is pressurized to determine that the seals are performing properly. It is expected that the majority of the leakage from valves, penetrations and seals would be into the reactor building. However, it is possible that leakage into other parts of the facility could occur. Such leakage paths that may affect significantly the consequences of accidents are to be minimized.

The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase oxygen concentration. Once the containment is filled with nitrogen to the required concentration, determining the oxygen concentration twice a week serves as an added assurance that the oxygen concentration will not exceed 4 percent.

3.7.B/3.7.C Standby Gas Treatment System and Secondary Containment

The secondary containment is designed to minimize any ground level release of radioactive materials which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service; the reactor building provides primary containment, if required, when the reactor is shutdown and the drywell is open. Because the secondary containment is an integral part of the complete containment system, secondary containment is required at all times that primary containment is required as well as during refueling.

The standby gas treatment system is designed to filter and exhaust the reactor building atmosphere to the stack during secondary containment isolation conditions. All three standby gas treatment system fans are designed to automatically start upon containment isolation and to maintain the reactor building pressure to the design negative pressure so that all leakage should be in-leakage.

High efficiency particulate air (HEPA) filters are installed before and after the charcoal absorbers to minimize potential release of particulates to the environment and to prevent clogging of the iodine absorbers. The charcoal absorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal absorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident

conditions. If the efficiencies of the HEPA filters and charcoal absorbers are as specified, the resulting doses will be less than the 10 CFR 100 guidelines for the accidents analyzed. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal absorbers.

Only two of the three standby gas treatment systems are needed to clean up the reactor building atmosphere upon containment isolation. If one system is found to be inoperable, there is no immediate threat to the containment system performance and reactor operation or refueling operation may continue while repairs are being made. If more than one train is inoperable, all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel must be suspended and all reactors placed in a cold shutdown condition, because the remaining train would provide only 50 percent of the capacity required to filter and exhaust the reactor building atmosphere to the stack. Suspension of these activities shall not preclude movement of a component to a safe, conservative position. Operations that have the potential for draining the reactor vessel must be suspended as soon as practical to minimize the probability of a vessel draindown and subsequent potential for fission product release. Draindown of a reactor vessel containing no fuel does not present the possibility for fuel damage or significant fission product release and therefore is not a nuclear safety concern.

4.7.B/4.7.C Standby Gas Treatment System and Secondary Containment

Initiating reactor building isolation and operation of the standby gas treatment system to maintain at least a 1/4 inch of water vacuum within the secondary containment provides an adequate test of the operation of the reactor building isolation valves, leak tightness of the reactor building and performance of the standby gas treatment system. Functionally testing the initiating sensors and associated trip logic demonstrates the capability for automatic actuation. Performing these tests prior to refueling will demonstrate secondary containment capability prior to the time the primary containment is opened for refueling. Periodic testing gives sufficient confidence of reactor building integrity and standby gas treatment system performance capability.

The test frequencies are adequate to detect equipment deterioration prior to significant defects, but the tests are not frequent enough to load the filters, thus reducing their reserve capacity too quickly. That the testing frequency is adequate to detect deterioration was demonstrated by the tests which showed no loss of filter efficiency after two years of operation in the rugged shipboard environment on the US Savannah (ORNL 3726). Pressure drop across the combined HEPA filters and charcoal adsorbers of less than six inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Heater capability, pressure drop and air distribution should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant shall be performed in accordance with USAEC Report DP-1082. Iodine removal efficiency tests shall

follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

All elements of the heater should be demonstrated to be functional and operable during the test of heater capacity. Operation of each filter train for a minimum of 10 hours each month will prevent moisture buildup in the filters and adsorber system.

With doors closed and fan in operation, DOP aerosol shall be sprayed externally along the full linear periphery of each respective door to check the gasket seal. Any detection of DOP in the fan exhaust shall be considered an unacceptable test result and the gaskets repaired and test repeated.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability and operability of filter cooling is necessary to assure system performance capability. If one standby gas treatment system is inoperable, the other systems must be tested daily. This substantiates the availability of the operable systems and thus reactor operation and refueling operation can continue for a limited period of time.

3.7.D/4.7.D Primary Containment Isolation Valves

Double isolation valves are provided on lines penetrating the primary containment and open to the free space of the containment. Closure of one of the valves in each line would be sufficient to maintain the integrity of the pressure suppression system. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a LOCA.

Group 1 - Process lines are isolated by reactor vessel low water level (378") in order to allow for removal of decay heat subsequent to a scram, yet isolate in time for proper operation of the core standby cooling systems. The valves in Group 1, except the reactor water sample line valves, are also closed when process instrumentation detects excessive main steam line flow, high radiation, low pressure, or main steam space high temperature. The reactor water sample line valves isolate only on reactor low water level at 378" or main steam line high radiation.

Group 2 - Isolation valves are closed by reactor vessel low water level (538") or high drywell pressure. The Group 2 isolation signal also "isolates" the reactor building and starts the standby gas treatment system. It is not desirable to actuate the Group 2 isolation signal by a transient or spurious signal.

Group 3 - Process lines are normally in use, and it is therefore not desirable to cause spurious isolation due to high drywell pressure resulting from nonsafety related causes. To protect the reactor from a possible pipe break in the system, isolation is provided by high temperature in the cleanup system area or high flow through the inlet to the cleanup system. Also, since the vessel could potentially be drained through the cleanup system, a low-level isolation is provided.

Groups 4 and 5 - Process lines are designed to remain operable and mitigate the consequences of an accident which results in the isolation of other process lines. The signals which initiate isolation of Groups 4 and 5 process lines are therefore indicative of a condition which would render them inoperable.

Group 6 - Lines are connected to the primary containment but not directly to the reactor vessel. These valves are isolated on reactor low water level (538"), high drywell pressure, or reactor building ventilation high radiation which would indicate a possible accident and necessitate primary containment isolation.

Group 7 - Process lines are closed only on the respective turbine steam supply valve not fully closed. This assures that the valves are not open when HPCI or RCIC action is required.

Group 8 - Line (traveling in-core probe) is isolated on high drywell pressure or reactor low water level (538"). This is to assure that this line does not provide a leakage path when containment pressure or reactor water level indicates a possible accident condition.

The maximum closure time for the automatic isolation valves of the primary containment and reactor vessel isolation control system have been selected in consideration of the design intent to prevent core uncovering following pipe breaks outside the primary containment and the need to contain released fission products following pipe breaks inside the primary containment.

In satisfying this design intent, an additional margin has been included in specifying maximum closure times. This margin permits identification of degraded valve performance prior to exceeding the design closure times.

In order to assure that the doses that may result from a steam line break do not exceed the 10 CFR 100 guidelines, it is necessary that no fuel rod perforation resulting from the accident occur prior to closure of the main steam line isolation valves. Analyses indicate that fuel rod cladding perforations would be avoided for main steam valve closure times, including instrument delay, as long as 10.5 seconds.

These valves are highly reliable, have low service requirements and most are normally closed. The initiating sensors and associated trip logic are also checked to demonstrate the capability for automatic isolation. The test interval of once per operating cycle for automatic initiation results in a failure probability of 1.1 x 10^{-7} that a line will not isolate. More frequent testing for valve operability in accordance with Specification 1.0.MM results in a greater assurance that the valve will be operable when needed.

The main steam line isolation valves are functionally tested per Specification 1.0.MM to establish a high degree of reliability.

The primary containment is penetrated by several small diameter instrument lines connected to the reactor coolant system. Each instrument line contains a 0.25-inch restricting orifice inside the primary containment and an excess flow check valve outside the primary containment.

3.7.E/4.7.E Control Room Emergency Ventilation

The control room emergency ventilation system is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room emergency ventilation system is designed to automatically start upon control room isolation and to maintain the control room pressure to the design positive pressure so that all leakage should be out leakage. During cycle 6, CREVS has been declared inoperable only because it does not meet its design basis for essentially zero unfiltered inleakage. Reactor power operations and fuel movement are acceptable until just prior to startup for unit 2 cycle 7. During cycle 6, CREVS must be demonstrated to be functional by performing all applicable surveillances. In the event that the applicable surveillances are not successfully performed, the actions required by the LCOs must be complied with.

High efficiency particulate absolute (HEPA) filters are installed prior to the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radioiodine to the control room. The inplace test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, there is no immediate threat to the control room and reactor operation or refueling operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within seven days, the reactor is shutdown and brought to Cold Shutdown within 24 hours or refueling operations are terminated.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than six inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report-1082. Iodine removal efficiency tests shall follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

3.7.F/4.7.F <u>Primary Containment Purge System</u>

The primary containment purge system is designed to provide air to purge and ventilate the primary containment system. The exhaust from the primary containment is first processed by a filter train assembly and then channeled through the reactor building roof exhaust system. During power operation, the primary containment purge and ventilation system is isolated from the primary containment by two isolation valves in series.

HEPA (high efficiency particulate air) filters are installed before the charcoal adsorbers followed by a centrifugal fan. The in-place test results should indicate a leak tightness of the system housing of not less than 99-percent and a HEPA efficiency of at least 99-percent removal of DOP particulates. The laboratory carbon sample test results should indicate a

radioactive methyl iodide removal efficiency of at least 85-percent. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, the Standby Gas Treatment System may be used to purge the containment.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 8.5 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report-1082. Iodine removal efficiency tests shall follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

If significant painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

THIS PAGE INTENTIONALLY LEFT BLANK.

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. 177
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 March 6, 1990, 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 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. 177, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Jack N. Donohew Jr. for
Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 30, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 177

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 overflow** pages are provided to maintain document completeness.

REMOVE	INSERT
3.7/4.7-13	3.7/4.7-13
3.7/4.7-14	3.7/4.7-14*
3.7/4.7-15	3.7/4.7-15
3.7/4.7-16	3.7/4.7-16
3.7/4.7-17	3.7/4.7-17
3.7/4.7-18	3.7/4.7-18*
3.7/4.7-47	3.7/4.7-47
3.7/4.7-48	3.7/4.7-48
3.7/4.7-49	3.7/4.7-49**
3.7/4.7-50	3.7/4.7-50**
3.7/4.7-51	3.7/4.7-51**
3.7/4.7-52	3.7/4.7-52**
3.7/4.7-53	3.7/4.7-53**
	3.7/4.7-53a**

LIMITING CONDITIONS FOR OPERATION

3.7.B. Standby Gas Treatment System

1. Except as specified in Specification 3.7.B.3 below, all three trains of the standby gas treatment system shall be OPERABLE at all times when secondary containment integrity is required.

SURVEILLANCE REQUIREMENTS

4.7.B. Standby Gas Treatment System

1. At least once per year, the following conditions shall be demonstrated.

   a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at a flow of 9000 cfm (± 10%).

   b. The inlet heaters on each circuit are tested in accordance with ANSI N510-1975, and are capable of an output of at least 40 kW.

   c. Air distribution is uniform within 20% across HEPA filters and charcoal adsorbers.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.B. Standby Gas Treatment System	4.7.B. Standby Gas Treatment System
2. a. The results of the in-place cold DOP and halogenated hydrocarbon tests at ≥ 10% design flow on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal when tested in accordance with ANSI N510-1975.	2. a. The tests and sample analysis of Specification 3.7.B.2 shall be performed at least once per operating cycle or once every 18 months whichever occurs first for standby service or after every 720 hours of system operation and following significant painting, fire, or chemical release in any ventilation zone communicating with the system.
b. The results of laboratory carbon sample analysis shall show ≥90% radioactive methyl iodide removal when tested in accordance with ASTM D3803 (130°C, 95% R.H.).	b. Cold DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.
c. System shall be shown to operate within ±10% design flow.	c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.B. Standby Gas Treatment System	4.7.B. Standby Gas Treatment System

4.7.B.2 (Cont'd)

d. Each train shall be operated a total of at least 10 hours every month.

e. Test sealing of gaskets for housing doors shall be performed utilizing chemical smoke generators during each test performed for compliance with Specification 4.7.B.2.a and Specification 3.7.B.2.a.

3.7.B.3. From and after the date that one train of the standby gas treatment system is made or found to be inoperable for any reason, REACTOR POWER OPERATION and fuel handling is permissible only during the succeeding 7 days unless such circuit is sooner made OPERABLE, provided that during such 7 days all active components of the other two standby gas treatment trains shall be operable.

4.7.B.3.

a. Once per operating cycle automatic initiation of each branch of the standby gas treatment system shall be demonstrated from each unit's controls.

b. At least once per year manual operability of the bypass valve for filter cooling shall be demonstrated.

c. When one train of the standby gas treatment system becomes inoperable the other two trains shall be demonstrated to be OPERABLE within 2 hours and daily thereafter.

3.7.B.4. If these conditions cannot be met:

a. Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel.

LIMITING CONDITIONS FOR OPERATION

3.7.B. Standby Gas Treatment System

3.7.B.4 (Cont'd)

b. Place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours.

3.7.C. Secondary Containment

1. Secondary containment integrity shall be maintained in the reactor zone at all times except as specified in 3.7.C.2.

2. If reactor zone secondary containment integrity cannot be maintained the following conditions shall be met:

   a. Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel.

   b. Restore reactor zone secondary containment integrity within 4 hours, or place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.B. Standby Gas Treatment System

4.7.C. Secondary Containment

1. Secondary containment surveillance shall be performed as indicated below:

   a. Secondary containment capability to maintain 1/4 inch of water vacuum under calm wind (< 5 mph) conditions with a system leakage rate of not more than 12,000 cfm, shall be demonstrated at each refueling outage prior to refueling.

2. After a secondary containment violation is determined, the standby gas treatment system will be operated immediately after the affected zones are isolated from the remainder of the secondary containment to confirm its ability to maintain the remainder of the secondary containment at 1/4-inch of water negative pressure under calm wind conditions.

LIMITING CONDITIONS FOR OPERATION

3.7.C. Secondary Containment

3. Secondary containment integrity shall be maintained in the refueling zone, except as specified in 3.7.C.4.

4. If refueling zone secondary containment cannot be maintained the following conditions shall be met:

   a. Handling of spent fuel and all operations over spent fuel pools and open reactor wells containing fuel shall be prohibited.

   b. The standby gas treatment system suction to the refueling zone will be blocked except for a controlled leakage area sized to assure the achieving of a vacuum of at least 1/4-inch of water and not over 3 inches of water in all three reactor zones. This is only applicable if reactor zone integrity is required.

D. Primary Containment Isolation Valves

1. When Primary Containment Integrity is required, all isolation valves listed in Table 3.7.A and all reactor coolant system instrument line flow check valves shall be OPERABLE except as specified in 3.7.D.2.

SURVEILLANCE REQUIREMENTS

D. Primary Containment Isolation Valves

1. The primary containment isolation valves surveillance shall be performed as follows:

   a. At least once per operating cycle, the OPERABLE isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and in accordance with Specification 1.0.MM, tested for closure times.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.D. Primary Containment Isolation Valves	4.7.D. Primary Containment Isolation Valves
	4.7.D.1 (Cont'd)
	b. In accordance with Specification 1.0.MM, all normally open power operated isolation valves shall be functionally tested.
	c. (Deleted)
	d. At least once per operating cycle the operability of the reactor coolant system instrument line flow check valves shall be verified.
2. In the event any isolation valve specified in Table 3.7.A becomes inoperable, reactor operation may continue provided at least one valve, in each line having an inoperable valve, is OPERABLE and within 4 hours either:	2. Whenever an isolation valve listed in Table 3.7.A is inoperable, the position of at least one other valve in each line having an inoperable valve shall be recorded daily.
a. The inoperable valve is restored to OPERABLE status, or	
b. Each affected line is isolated by use of at least one deactivated containment isolation valve secured in the isolated position.	
3. If Specification 3.7.D.1 and 3.7.D.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the COLD SHUTDOWN CONDITION within 24 hours.	

The primary containment leak rate test frequency is based on maintaining adequate assurance that the leak rate remains within the specification. The leak rate test frequency is based on the NRC guide for developing leak rate testing and surveillance of reactor containment vessels. Allowing the test intervals to be extended up to 10 months permits some flexibility needed to have the tests coincide with scheduled or unscheduled shutdown periods.

The penetration and air purge piping leakage test frequency, along with the containment leak rate tests, is adequate to allow detection of leakage trends. Whenever a bolted double-gasketed penetration is broken and remade, the space between the gaskets is pressurized to determine that the seals are performing properly. It is expected that the majority of the leakage from valves, penetrations and seals would be into the reactor building. However, it is possible that leakage into other parts of the facility could occur. Such leakage paths that may affect significantly the consequences of accidents are to be minimized.

The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase oxygen concentration. Once the containment is filled with nitrogen to the required concentration, determining the oxygen concentration twice a week serves as an added assurance that the oxygen concentration will not exceed 4 percent.

3.7.B/3.7.C <u>Standby Gas Treatment System and Secondary Containment</u>

The secondary containment is designed to minimize any ground level release of radioactive materials which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service; the reactor building provides primary containment, if required, when the reactor is shutdown and the drywell is open. Because the secondary containment is an integral part of the complete containment system, secondary containment is required at all times that primary containment is required as well as during refueling.

The standby gas treatment system is designed to filter and exhaust the reactor building atmosphere to the stack during secondary containment isolation conditions. All three standby gas treatment system fans are designed to automatically start upon containment isolation and to maintain the reactor building pressure to the design negative pressure so that all leakage should be in-leakage.

High efficiency particulate air (HEPA) filters are installed before and after the charcoal absorbers to minimize potential release of particulates to the environment and to prevent clogging of the iodine absorbers. The charcoal absorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal absorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident

conditions. If the efficiencies of the HEPA filters and charcoal absorbers are as specified, the resulting doses will be less than the 10 CFR 100 guidelines for the accidents analyzed. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal absorbers.

Only two of the three standby gas treatment systems are needed to clean up the reactor building atmosphere upon containment isolation. If one system is found to be inoperable, there is no immediate threat to the containment system performance and reactor operation or refueling operation may continue while repairs are being made. If more than one train is inoperable, all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel must be suspended and all reactors placed in a cold shutdown condition, because the remaining train would provide only 50 percent of the capacity required to filter and exhaust the reactor building atmosphere to the stack. Suspension of these activities shall not preclude movement of a component to a safe, conservative position. Operations that have the potential for draining the reactor vessel must be suspended as soon as practical to minimize the probability of a vessel draindown and subsequent potential for fission product release. Draindown of a reactor vessel containing no fuel does not present the possibility for fuel damage or significant fission product release and therefore is not a nuclear safety concern.

4.7.B/4.7.C Standby Gas Treatment System and Secondary Containment

Initiating reactor building isolation and operation of the standby gas treatment system to maintain at least a 1/4 inch of water vacuum within the secondary containment provides an adequate test of the operation of the reactor building isolation valves, leak tightness of the reactor building and performance of the standby gas treatment system. Functionally testing the initiating sensors and associated trip logic demonstrates the capability for automatic actuation. Performing these tests prior to refueling will demonstrate secondary containment capability prior to the time the primary containment is opened for refueling. Periodic testing gives sufficient confidence of reactor building integrity and standby gas treatment system performance capability.

The test frequencies are adequate to detect equipment deterioration prior to significant defects, but the tests are not frequent enough to load the filters, thus reducing their reserve capacity too quickly. That the testing frequency is adequate to detect deterioration was demonstrated by the tests which showed no loss of filter efficiency after two years of operation in the rugged shipboard environment on the US Savannah (ORNL 3726). Pressure drop across the combined HEPA filters and charcoal adsorbers of less than six inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Heater capability, pressure drop and air distribution should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant shall be performed in accordance with USAEC Report DP-1082. Iodine removal efficiency tests shall

follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

All elements of the heater should be demonstrated to be functional and operable during the test of heater capacity. Operation of each filter train for a minimum of 10 hours each month will prevent moisture buildup in the filters and adsorber system.

With doors closed and fan in operation, DOP aerosol shall be sprayed externally along the full linear periphery of each respective door to check the gasket seal. Any detection of DOP in the fan exhaust shall be considered an unacceptable test result and the gaskets repaired and test repeated.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability and operability of filter cooling is necessary to assure system performance capability. If one standby gas treatment system is inoperable, the other systems must be tested daily. This substantiates the availability of the operable systems and thus reactor operation and refueling operation can continue for a limited period of time.

3.7.D/4.7.D Primary Containment Isolation Valves

Double isolation valves are provided on lines penetrating the primary containment and open to the free space of the containment. Closure of one of the valves in each line would be sufficient to maintain the integrity of the pressure suppression system. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a LOCA.

Group 1 - Process lines are isolated by reactor vessel low water level (378") in order to allow for removal of decay heat subsequent to a scram, yet isolate in time for proper operation of the core standby cooling systems. The valves in Group 1, except the reactor water sample line valves, are also closed when process instrumentation detects excessive main steam line flow, high radiation, low pressure, or main steam space high temperature. The reactor water sample line valves isolate only on reactor low water level at 378" or main steam line high radiation.

Group 2 - Isolation valves are closed by reactor vessel low water level (538") or high drywell pressure. The Group 2 isolation signal also "isolates" the reactor building and starts the standby gas treatment system. It is not desirable to actuate the Group 2 isolation signal by a transient or spurious signal.

Group 3 - Process lines are normally in use, and it is therefore not desirable to cause spurious isolation due to high drywell pressure resulting from nonsafety related causes. To protect the reactor from a possible pipe break in the system, isolation is provided by high temperature in the cleanup system area or high flow through the inlet to the cleanup system. Also, since the vessel could potentially be drained through the cleanup system, a low-level isolation is provided.

Groups 4 and 5 - Process lines are designed to remain operable and mitigate the consequences of an accident which results in the isolation of other process lines. The signals which initiate isolation of Groups 4 and 5 process lines are therefore indicative of a condition which would render them inoperable.

Group 6 - Lines are connected to the primary containment but not directly to the reactor vessel. These valves are isolated on reactor low water level (538"), high drywell pressure, or reactor building ventilation high radiation which would indicate a possible accident and necessitate primary containment isolation.

Group 7 - Process lines are closed only on the respective turbine steam supply valve not fully closed. This assures that the valves are not open when HPCI or RCIC action is required.

Group 8 - Line (traveling in-core probe) is isolated on high drywell pressure or reactor low water level (538"). This is to assure that this line does not provide a leakage path when containment pressure or reactor water level indicates a possible accident condition.

The maximum closure time for the automatic isolation valves of the primary containment and reactor vessel isolation control system have been selected in consideration of the design intent to prevent core uncovering following pipe breaks outside the primary containment and the need to contain released fission products following pipe breaks inside the primary containment.

In satisfying this design intent, an additional margin has been included in specifying maximum closure times. This margin permits identification of degraded valve performance prior to exceeding the design closure times.

In order to assure that the doses that may result from a steam line break do not exceed the 10 CFR 100 guidelines, it is necessary that no fuel rod perforation resulting from the accident occur prior to closure of the main steam line isolation valves. Analyses indicate that fuel rod cladding perforations would be avoided for main steam valve closure times, including instrument delay, as long as 10.5 seconds.

These valves are highly reliable, have low service requirements and most are normally closed. The initiating sensors and associated trip logic are also checked to demonstrate the capability for automatic isolation. The test interval of once per operating cycle for automatic initiation results in a failure probability of 1.1×10^{-7} that a line will not isolate. More frequent testing for valve operability in accordance with Specification 1.0.MM results in a greater assurance that the valve will be operable when needed.

The main steam line isolation valves are functionally tested per Specification 1.0.MM to establish a high degree of reliability.

The primary containment is penetrated by several small diameter instrument lines connected to the reactor coolant system. Each instrument line contains a 0.25-inch restricting orifice inside the primary containment and an excess flow check valve outside the primary containment.

3.7.E/4.7.E Control Room Emergency Ventilation

The control room emergency ventilation system is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room emergency ventilation system is designed to automatically start upon control room isolation and to maintain the control room pressure to the design positive pressure so that all leakage should be out leakage. During cycle 6, CREVS has been declared inoperable only because it does not meet its design basis for essentially zero unfiltered inleakage. Reactor power operations and fuel movement are acceptable until just prior to startup for unit 2 cycle 7. During cycle 6, CREVS must be demonstrated to be functional by performing all applicable surveillances. In the event that the applicable surveillances are not successfully performed, the actions required by the LCOs must be complied with.

High efficiency particulate absolute (HEPA) filters are installed prior to the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radioiodine to the control room. The inplace test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, there is no immediate threat to the control room and reactor operation or refueling operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within seven days, the reactor is shutdown and brought to Cold Shutdown within 24 hours or refueling operations are terminated.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than six inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report-1082. Iodine removal efficiency tests shall follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

3.7.F/4.7.F Primary Containment Purge System

The primary containment purge system is designed to provide air to purge and ventilate the primary containment system. The exhaust from the primary containment is first processed by a filter train assembly and then channeled through the reactor building roof exhaust system. During power operation, the primary containment purge and ventilation system is isolated from the primary containment by two isolation valves in series.

HEPA (high efficiency particulate air) filters are installed before the charcoal adsorbers followed by a centrifugal fan. The in-place test results should indicate a leak tightness of the system housing of not less than 99-percent and a HEPA efficiency of at least 99-percent removal of DOP particulates. The laboratory carbon sample test results should indicate a

radioactive methyl iodide removal efficiency of at least 85-percent. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, the Standby Gas Treatment System may be used to purge the containment.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 8.5 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report-1082. Iodine removal efficiency tests shall follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

If significant painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

THIS PAGE INTENTIONALLY LEFT BLANK.

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. 145
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 March 6, 1990, 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 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. 145, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Jack N. Donohew Jr. for
Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 30, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 145

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 overflow** pages are provided to maintain document completeness.

REMOVE	INSERT
3.7/4.7-13	3.7/4.7-13
3.7/4.7-14	3.7/4.7-14*
3.7/4.7-15	3.7/4.7-15
3.7/4.7-16	3.7/4.7-16
3.7/4.7-17	3.7/4.7-17
3.7/4.7-18	3.7/4.7-18*
3.7/4.7-47	3.7/4.7-45
3.7/4.7-48	3.7/4.7-46
3.7/4.7-49	3.7/4.7-47**
3.7/4.7-50	3.7/4.7-48**
3.7/4.7-51	3.7/4.7-49**
3.7/4.7-52	3.7/4.7-50**
3.7/4.7-53	3.7/4.7-51**
	3.7/4.7-51a**

LIMITING CONDITIONS FOR OPERATION

3.7.B. Standby Gas Treatment System

1. Except as specified in Specification 3.7.B.3 below, all three trains of the standby gas treatment system shall be OPERABLE at all times when secondary containment integrity is required.

SURVEILLANCE REQUIREMENTS

4.7.B. Standby Gas Treatment System

1. At least once per year, the following conditions shall be demonstrated.

   a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at a flow of 9000 cfm (± 10%).

   b. The inlet heaters on each circuit are tested in accordance with ANSI N510-1975, and are capable of an output of at least 40 kW.

   c. Air distribution is uniform within 20% across HEPA filters and charcoal adsorbers.

LIMITING CONDITIONS FOR OPERATION

3.7.B. Standby Gas Treatment System

2. a. The results of the in-place cold DOP and halogenated hydrocarbon tests at ≥ 10% design flow on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal when tested in accordance with ANSI N510-1975.

b. The results of laboratory carbon sample analysis shall show ≥90% radioactive methyl iodide removal when tested in accordance with ASTM D3803 (130°C, 95% R.H.).

c. System shall be shown to operate within ±10% design flow.

SURVEILLANCE REQUIREMENTS

4.7.B. Standby Gas Treatment System

2. a. The tests and sample analysis of Specification 3.7.B.2 shall be performed at least once per operating cycle or once every 18 months whichever occurs first for standby service or after every 720 hours of system operation and following significant painting, fire, or chemical release in any ventilation zone communicating with the system.

b. Cold DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing.

LIMITING CONDITIONS FOR OPERATION

3.7.B. Standby Gas Treatment System

3. From and after the date that one train of the standby gas treatment system is made or found to be inoperable for any reason, REACTOR POWER OPERATION and fuel handling is permissible only during the succeeding 7 days unless such circuit is sooner made OPERABLE, provided that during such 7 days all active components of the other two standby gas treatment trains shall be operable.

4. If these conditions cannot be met:

   a. Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel.

SURVEILLANCE REQUIREMENTS

4.7.B. Standby Gas Treatment System

4.7.B.2 (Cont'd)

d. Each train shall be operated a total of at least 10 hours every month.

e. Test sealing of gaskets for housing doors shall be performed utilizing chemical smoke generators during each test performed for compliance with Specification 4.7.B.2.a and Specification 3.7.B.2.a.

3. a. Once per operating cycle automatic initiation of each branch of the standby gas treatment system shall be demonstrated from each unit's controls.

   b. At least once per year manual operability of the bypass valve for filter cooling shall be demonstrated.

   c. When one train of the standby gas treatment system becomes inoperable the other two trains shall be demonstrated to be OPERABLE within 2 hours and daily thereafter.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.7.B. Standby Gas Treatment System	4.7.B. Standby Gas Treatment System
3.7.B.4 (Cont'd) b. Place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours.	
3.7.C. Secondary Containment	4.7.C. Secondary Containment
1. Secondary containment integrity shall be maintained in the reactor zone at all times except as specified in 3.7.C.2.	1. Secondary containment surveillance shall be performed as indicated below: a. Secondary containment capability to maintain 1/4 inch of water vacuum under calm wind (< 5 mph) conditions with a system inleakage rate of not more than 12,000 cfm, shall be demonstrated at each refueling outage prior to refueling.
2. If reactor zone secondary containment integrity cannot be maintained the following conditions shall be met: a. Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel. b. Restore reactor zone secondary containment integrity within 4 hours, or place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours.	2. After a secondary containment violation is determined, the standby gas treatment system will be operated immediately after the affected zones are isolated from the remainder of the secondary containment to confirm its ability to maintain the remainder of the secondary containment at 1/4-inch of water negative pressure under calm wind conditions.

LIMITING CONDITIONS FOR OPERATION

3.7.C. Secondary Containment

3. Secondary containment integrity shall be maintained in the refueling zone, except as specified in 3.7.C.4.

4. If refueling zone secondary containment cannot be maintained the following conditions shall be met:

   a. Handling of spent fuel and all operations over spent fuel pools and open reactor wells containing fuel shall be prohibited.

   b. The standby gas treatment system suction to the refueling zone will be blocked except for a controlled leakage area sized to assure the achieving of a vacuum of at least 1/4-inch of water and not over 3 inches of water in all three reactor zones. This is only applicable if reactor zone integrity is required.

D. Primary Containment Isolation Valves

1. When Primary Containment Integrity is required, all isolation valves listed in Table 3.7.A and all reactor coolant system instrument line flow check valves shall be OPERABLE except as specified in 3.7.D.2.

SURVEILLANCE REQUIREMENTS

D. Primary Containment Isolation Valves

1. The primary containment isolation valves surveillance shall be performed as follows:

   a. At least once per operating cycle, the OPERABLE isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and in accordance with Specification 1.0.MM, tested for closure times.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS

3.7.D. Primary Containment Isolation Valves

2. In the event any isolation valve specified in Table 3.7.A becomes inoperable, reactor operation may continue provided at least one valve, in each line having an inoperable valve, is OPERABLE and within 4 hours either:
   a. The inoperable valve is restored to OPERABLE status, or
   b. Each affected line is isolated by use of at least one deactivated containment isolation valve secured in the isolated position.
3. If Specification 3.7.D.1 and 3.7.D.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the COLD SHUTDOWN CONDITION within 24 hours.

4.7.D. Primary Containment Isolation Valves

4.7.D.1 (Cont'd)

   b. In accordance with Specification 1.0.MM, all normally open power operated isolation valves shall be functionally tested.
   c. (Deleted)
   d. At least once per operating cycle the operability of the reactor coolant system instrument line flow check valves shall be verified.

2. Whenever an isolation valve listed in Table 3.7.A is inoperable, the position of at least one other valve in each line having an inoperable valve shall be recorded daily.

The primary containment leak rate test frequency is based on maintaining adequate assurance that the leak rate remains within the specification. The leak rate test frequency is based on the NRC guide for developing leak rate testing and surveillance of reactor containment vessels. Allowing the test intervals to be extended up to 10 months permits some flexibility needed to have the tests coincide with scheduled or unscheduled shutdown periods.

The penetration and air purge piping leakage test frequency, along with the containment leak rate tests, is adequate to allow detection of leakage trends. Whenever a bolted double-gasketed penetration is broken and remade, the space between the gaskets is pressurized to determine that the seals are performing properly. It is expected that the majority of the leakage from valves, penetrations and seals would be into the reactor building. However, it is possible that leakage into other parts of the facility could occur. Such leakage paths that may affect significantly the consequences of accidents are to be minimized.

The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase oxygen concentration. Once the containment is filled with nitrogen to the required concentration, determining the oxygen concentration twice a week serves as an added assurance that the oxygen concentration will not exceed 4 percent.

3.7.B/3.7.C Standby Gas Treatment System and Secondary Containment

The secondary containment is designed to minimize any ground level release of radioactive materials which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service; the reactor building provides primary containment, if required, when the reactor is shutdown and the drywell is open. Because the secondary containment is an integral part of the complete containment system, secondary containment is required at all times that primary containment is required as well as during refueling.

The standby gas treatment system is designed to filter and exhaust the reactor building atmosphere to the stack during secondary containment isolation conditions. All three standby gas treatment system fans are designed to automatically start upon containment isolation and to maintain the reactor building pressure to the design negative pressure so that all leakage should be in-leakage.

High efficiency particulate air (HEPA) filters are installed before and after the charcoal absorbers to minimize potential release of particulates to the environment and to prevent clogging of the iodine absorbers. The charcoal absorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal absorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident

conditions. If the efficiencies of the HEPA filters and charcoal absorbers are as specified, the resulting doses will be less than the 10 CFR 100 guidelines for the accidents analyzed. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal absorbers.

Only two of the three standby gas treatment systems are needed to clean up the reactor building atmosphere upon containment isolation. If one system is found to be inoperable, there is no immediate threat to the containment system performance and reactor operation or refueling operation may continue while repairs are being made. If more than one train is inoperable, all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel must be suspended and all reactors placed in a cold shutdown condition, because the remaining train would provide only 50 percent of the capacity required to filter and exhaust the reactor building atmosphere to the stack. Suspension of these activities shall not preclude movement of a component to a safe, conservative position. Operations that have the potential for draining the reactor vessel must be suspended as soon as practical to minimize the probability of a vessel draindown and subsequent potential for fission product release. Draindown of a reactor vessel containing no fuel does not present the possibility for fuel damage or significant fission product release and therefore is not a nuclear safety concern.

4.7.B/4.7.C Standby Gas Treatment System and Secondary Containment

Initiating reactor building isolation and operation of the standby gas treatment system to maintain at least a 1/4 inch of water vacuum within the secondary containment provides an adequate test of the operation of the reactor building isolation valves, leak tightness of the reactor building and performance of the standby gas treatment system. Functionally testing the initiating sensors and associated trip logic demonstrates the capability for automatic actuation. Performing these tests prior to refueling will demonstrate secondary containment capability prior to the time the primary containment is opened for refueling. Periodic testing gives sufficient confidence of reactor building integrity and standby gas treatment system performance capability.

The test frequencies are adequate to detect equipment deterioration prior to significant defects, but the tests are not frequent enough to load the filters, thus reducing their reserve capacity too quickly. That the testing frequency is adequate to detect deterioration was demonstrated by the tests which showed no loss of filter efficiency after two years of operation in the rugged shipboard environment on the US Savannah (ORNL 3726). Pressure drop across the combined HEPA filters and charcoal adsorbers of less than six inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Heater capability, pressure drop and air distribution should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant shall be performed in accordance with USAEC Report DP-1082. Iodine removal efficiency tests shall

follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

All elements of the heater should be demonstrated to be functional and operable during the test of heater capacity. Operation of each filter train for a minimum of 10 hours each month will prevent moisture buildup in the filters and adsorber system.

With doors closed and fan in operation, DOP aerosol shall be sprayed externally along the full linear periphery of each respective door to check the gasket seal. Any detection of DOP in the fan exhaust shall be considered an unacceptable test result and the gaskets repaired and test repeated.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability and operability of filter cooling is necessary to assure system performance capability. If one standby gas treatment system is inoperable, the other systems must be tested daily. This substantiates the availability of the operable systems and thus reactor operation and refueling operation can continue for a limited period of time.

3.7.D/4.7.D Primary Containment Isolation Valves

Double isolation valves are provided on lines penetrating the primary containment and open to the free space of the containment. Closure of one of the valves in each line would be sufficient to maintain the integrity of the pressure suppression system. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a LOCA.

Group 1 - Process lines are isolated by reactor vessel low water level (378") in order to allow for removal of decay heat subsequent to a scram, yet isolate in time for proper operation of the core standby cooling systems. The valves in Group 1, except the reactor water sample line valves, are also closed when process instrumentation detects excessive main steam line flow, high radiation, low pressure, or main steam space high temperature. The reactor water sample line valves isolate only on reactor low water level at 378" or main steam line high radiation.

Group 2 - Isolation valves are closed by reactor vessel low water level (538") or high drywell pressure. The Group 2 isolation signal also "isolates" the reactor building and starts the standby gas treatment system. It is not desirable to actuate the Group 2 isolation signal by a transient or spurious signal.

Group 3 - Process lines are normally in use, and it is therefore not desirable to cause spurious isolation due to high drywell pressure resulting from nonsafety related causes. To protect the reactor from a possible pipe break in the system, isolation is provided by high temperature in the cleanup system area or high flow through the inlet to the cleanup system. Also, since the vessel could potentially be drained through the cleanup system, a low-level isolation is provided.

Groups 4 and 5 - Process lines are designed to remain operable and mitigate the consequences of an accident which results in the isolation of other process lines. The signals which initiate isolation of Groups 4 and 5 process lines are therefore indicative of a condition which would render them inoperable.

Group 6 - Lines are connected to the primary containment but not directly to the reactor vessel. These valves are isolated on reactor low water level (538"), high drywell pressure, or reactor building ventilation high radiation which would indicate a possible accident and necessitate primary containment isolation.

Group 7 - Process lines are closed only on the respective turbine steam supply valve not fully closed. This assures that the valves are not open when HPCI or RCIC action is required.

Group 8 - Line (traveling in-core probe) is isolated on high drywell pressure or reactor low water level (538"). This is to assure that this line does not provide a leakage path when containment pressure or reactor water level indicates a possible accident condition.

The maximum closure time for the automatic isolation valves of the primary containment and reactor vessel isolation control system have been selected in consideration of the design intent to prevent core uncovering following pipe breaks outside the primary containment and the need to contain released fission products following pipe breaks inside the primary containment.

In satisfying this design intent, an additional margin has been included in specifying maximum closure times. This margin permits identification of degraded valve performance prior to exceeding the design closure times.

In order to assure that the doses that may result from a steam line break do not exceed the 10 CFR 100 guidelines, it is necessary that no fuel rod perforation resulting from the accident occur prior to closure of the main steam line isolation valves. Analyses indicate that fuel rod cladding perforations would be avoided for main steam valve closure times, including instrument delay, as long as 10.5 seconds.

These valves are highly reliable, have low service requirements and most are normally closed. The initiating sensors and associated trip logic are also checked to demonstrate the capability for automatic isolation. The test interval of once per operating cycle for automatic initiation results in a failure probability of 1.1 x 10^{-7} that a line will not isolate. More frequent testing for valve operability in accordance with Specification 1.0.MM results in a greater assurance that the valve will be operable when needed.

The main steam line isolation valves are functionally tested per Specification 1.0.MM to establish a high degree of reliability.

The primary containment is penetrated by several small diameter instrument lines connected to the reactor coolant system. Each instrument line contains a 0.25-inch restricting orifice inside the primary containment and an excess flow check valve outside the primary containment.

3.7.E/4.7.E Control Room Emergency Ventilation

The control room emergency ventilation system is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room emergency ventilation system is designed to automatically start upon control room isolation and to maintain the control room pressure to the design positive pressure so that all leakage should be out leakage. During cycle 6, CREVS has been declared inoperable only because it does not meet its design basis for essentially zero unfiltered inleakage. Reactor power operations and fuel movement are acceptable until just prior to startup for unit 2 cycle 7. During cycle 6, CREVS must be demonstrated to be functional by performing all applicable surveillances. In the event that the applicable surveillances are not successfully performed, the actions required by the LCOs must be complied with.

High efficiency particulate absolute (HEPA) filters are installed prior to the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radioiodine to the control room. The inplace test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, there is no immediate threat to the control room and reactor operation or refueling operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within seven days, the reactor is shutdown and brought to Cold Shutdown within 24 hours or refueling operations are terminated.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than six inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report-1082. Iodine removal efficiency tests shall follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

3.7.F/4.7.F Primary Containment Purge System

The primary containment purge system is designed to provide air to purge and ventilate the primary containment system. The exhaust from the primary containment is first processed by a filter train assembly and then channeled through the reactor building roof exhaust system. During power operation, the primary containment purge and ventilation system is isolated from the primary containment by two isolation valves in series.

HEPA (high efficiency particulate air) filters are installed before the charcoal adsorbers followed by a centrifugal fan. The in-place test results should indicate a leak tightness of the system housing of not less than 99-percent and a HEPA efficiency of at least 99-percent removal of DOP particulates. The laboratory carbon sample test results should indicate a

radioactive methyl iodide removal efficiency of at least 85-percent. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, the Standby Gas Treatment System may be used to purge the containment.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 8.5 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report-1082. Iodine removal efficiency tests shall follow ASTM D3803. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1975. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

If significant painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

THIS PAGE INTENTIONALLY LEFT BLANK.

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

ENCLOSURE 4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 174 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 145 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 letter from the Tennessee Valley Authority (TVA), (the licensee), signed by M. J. Ray on March 6, 1990, the licensee requested an amendment to the Browns Ferry Technical Specifications (TS). The proposed TS changes would: (1) delete the remaining portion of temporary amendments 151, 147, and 122 for Browns Ferry Units 1, 2 and 3 respectively; (2) clarify the actions to be taken in Limiting Condition for Operation (LCO) 3.7.B.4 (Standby Gas Treatment System) and revise the bases accordingly; (3) revise the requirements of LCO 3.7.C.2 (Secondary Containment); and (4) add a clarifying statment to LCO 3.7.C.4.b (Secondary Containment). TVA 's justification for this TS change involved benefits and savings in outage work efficiency without any reduction in safety.

In conjunction with their TS amendment request, TVA also requested a temporary waiver of compliance (in another letter dated March 6, 1990) from the LCO requirement of 3.7.C.2.d while the staff completed its evaluation of the proposed amendment. The staff approved of TVA's request and issued a temporary waiver of TS compliance, on March 8, 1990, based upon the insignificant impact upon safety and the potential for limiting further delays in restart.

2.0 EVALUATION

The licensee proposed to change the Browns Ferry Units 1, 2 and 3 TS in order to clarify the LCO and associated bases pertaining to the interrelationships of primary containment, secondary containment and the standby gas treatment system (SGTS). The present TS are too restrictive since they prevent modifications to secondary containment components when primary containment integrity is not available, even when the reactor is defueled. This change would result in the following TS modifications: (1) deletion of the remaining portion of the temporary TS amendments 151, 147 and 122 for Units 1, 2 and 3 respectively (SGTS); (2) clarification of Section 3.7.B.4 (SGTS) and its associated bases; (3) revising requirements of Section 3.7.C.2 (secondary containment); and (4) addition of a clarifying statement to Section 3.7.C.4.b (SGTS and secondary containment).

The following is a description and evaluation of the proposed TS Change:

(1) Deletion of Remaining Temporary TS Amendments (151, 147, and 122)

These amendments were issued July 20, 1988, to allow fuel movement for the purpose of fuel reconstitution for Unit 2 when only two of the three SGTS trains were operable and the Control Room Emergency Ventilation System (CREVS) was inoperable. These amendments were justified based on the minimal gaseous fission product activity due to the age of the fuel. This change was a temporary change to be in effect until just prior to fuel load. The portion of these temporary amendments dealing with the CREVS were subsquently removed by amendments 156, 152, and 127 that were issued October 3, 1988 for Units 1, 2, and 3, respectively. Fuel reconstitution has been completed; therefore, the remainder of these amendments are being deleted. Since these amendments are no longer applicable due to the completion of the fuel reconstitution program, the staff concludes that deleting the remaining temporary TS changes is acceptable.

(2) Clarification of Section 3.7.B.4 and the Associated Bases

The existing LCO 3.7.B.4 states the following:

"If these conditions cannot be met, the reactor shall be placed in a condition for which the standby gas treatment system is not required."

The proposed TS Change to LCO 3.7.B.4 would state the following:

"If these conditions cannot be met:

(a) Suspend all fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel.

(b) Place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours."

The SGTS provides a means for minimizing the release of radioactive material by filtering and exhausting the air from any and all zones of the Units 1, 2 and 3 reactor buildings. SGTS also maintains a negative pressure between the reactor building and the outside environment to preclude unfiltered leakage. Because of the SGTS safety function, when the seven day LCO is exceeded for one train of the SGTS being inoperative or more than one train becomes inoperative, all operations which have a potential for initiating a radioactive release are suspended for all three units.

The proposed change is being made to clarify what specific actions are to be taken if the seven day LCO for one train of SGTS inoperable (LCO 3.7.B.3) cannot be met or if more than one train of the SGTS is inoperable. The current TS offers only general guidance if LCO 3.7.B.3 cannot be met and therefore creates the potential for varying interpretations by the operator as to what actions to take or what constitues a condition where the SGTS is not required.

This TS change will provide specific actions required to be taken if the LCO cannot be met, thereby, minimizing the potential for misinterpretation. The actions required by this LCO will provide for the safe and timely cessation of activities which have a potential for an accidental release of radioactive material, and provide for an orderly shutdown of all reactors with minimum potential risk of fuel damage. This TS change is consistent with the General Electric (GE) Boiling Water Reactor (BWR) Standard TSs (NUREG-0123) approved by the staff. The bases of TS 3.7.B are also being revised to reflect this change. Based on the above, the staff concludes that the change to LCO 3.7.B.4 is acceptable.

(3) Revision of Requirements of Section 3.7.C.2

The existing LCO 3.7.C.2 states the following:

> "If reactor zone secondary containment integrity cannot be maintained the following conditions shall be met:
>
> a. The reactor shall be made subcritical and Specification 3.3.A shall be met.
>
> b. The reactor shall be cooled down below 212°F and the reactor coolant system vented.
>
> c. Fuel movement shall not be permitted in the reactor zone.
>
> d. Primary containment integrity maintained."

The proposed TS Change to LCO 3.7.C.2 would state the following:

> "If reactor zone secondary containment integrity cannot be maintained the following conditons shall be met:
>
> a. Suspend fuel handling operations, core alterations, and activities with the potential to drain any reactor vessel containing fuel.
>
> b. Restore reactor zone secondary containment integrity within four hours, or place all reactors in at least a HOT SHUTDOWN CONDITION within the next 12 hours and in a COLD SHUTDOWN CONDITION within the following 24 hours."

The secondary containment system is designed to minimize any ground level release of radioactive material which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service. The reactor building can also substitute for primary containment, if required, when the reactor is shutdown and the drywell is open. Because secondary containment is an integral part of the containment system, secondary containment is required any time primary containment is required as well as during refueling operations.

Proposed LCO 3.7.C.2.a is required for activities associated with the potential for immediate fuel damage or loss of reactor vessel water inventory. New or irradiated fuel handling operations and core alterations (i.e., movement of fuel, sources, incore instruments, or reactivity controls within the reactor pressure vessel with the head removed and fuel in the vessel) have the potential to cause a fuel handling accident. This LCO provides for an orderly suspension of these activities and for movement of a component to a safe conservative position. The proposed LCO replaces existing LCO 3.7.C.2.c in its entirety with more explicit requirements.

Proposed LCO 3.7.C.2.b allows four hours to restore reactor building secondary containment operability before initiating shutdown of operating reactors. This allows a reasonable time to fix the problem before initiating shutdown. The allowed time to reach a HOT SHUTDOWN CONDITION (12 hours) and a COLD SHUTDOWN CONDITION (within the following 24 hours) is sufficient to allow an orderly shutdown and cooldown of the reactor. A controlled evolution minimizes the potential risk for fuel damage. This change and the specific allowable time frames are consistent with NUREG-0123, and fully scopes applicable portions of existing LCOs 3.7.C.2.a & b.

Since these requirements place the reactor in a safe condition and minimize the potential for occurrence of any design basis accident which could release radioactive material to the environment, the existing requirement 3.7.C.2.d (to maintain primary containment integrity), under these conditions, is unnecessary.

TS LCO 3.3.A defines the control rod shutdown margin and is applicable at all times during the fuel cycle. Uncoupling this from secondary containment does not change the TS requirement for control rod operability under TS 3.3.A.

A minor change to the bases is also being made to indicate that the reactor building provides primary containment, if required, when the reactor is shutdown and the drywell is open.

Based on the above, the staff concludes that the change to LCO 3.7.C.2 is acceptable.

(4) Addition to Section 3.7.C.4.b

The existing LCO 3.7.C.4.b states the following:

> "The standby gas treatment system suction to the refueling zone will be blocked except for a controlled leakage area sized to assure the achieving of a vacuum of at least 1/4-inch of water and not over three inches of water in all three reactor zones."

The proposed TS change to LCO 3.7.C.4.b would add the following to the existing LCO:

> "This is only applicable if reactor zone integrity is required."

This change eliminates the requirement to block the SGTS suction to the refueling zone if reactor zone secondary containment is not required. If reactor zone secondary containment was not required, the SGTS would not be required to be operable so the action of blocking its suction would be unneeded. This clarification prevents inappropriate interpretations of operability requirements when SGTS is not operable, and is consistent with NUREG-0123.

Each of the proposed TS changes described above seeks to clarify the BFN TS to limit the need for interpretation and to make them consistent with NUREG-0123. The risk of design basis accidents without adequate containment or treatment are minimized by the actions requiring shutdown of BFN reactors in an orderly manner and suspension of fuel handling activities, core alterations, and activities with the potential to drain any reactor vessel. Also, since the proposed TS changes improve the effect of operator responses to accident situations by clarifying required actions, we conclude that TVA's amendment request is acceptable.

3.0 FINDING OF EXIGENT CIRCUMSTANCES

TVA requested a revision of the secondary containment operability requirements in order to expedite performance of support modifications on common portions of the Emergency Equipment Cooling Water (EECW) system. EECW is required for operability of the Emergency Diesel Generators that supply emergency power for the SGTS. Since the SGTS is required to be operable whenever secondary containment is operable, this also requires EECW to be operable. As such, modification work on the EECW system has been severely constrained by TS which require one train of EECW operable at all times. By changing the operability requirements of secondary containment for certain plant conditions, TVA would be able to make both trains of EECW inoperable during the current outage. This would allow TVA to potentially complete the required Unit 2 modifications nearly a month sooner than under the existing TS.

The staff finds that failure to grant the proposed changes could unnecessarily delay restart of Unit 2 by increasing the outage time for performing required EECW modifications. Furthermore, the staff finds that even had the licensee provided a more timely request, exigent circumstances would have still applied (i.e. TVA might have saved themselves even more outage time than one month with an earlier request). Accordingly, the staff concludes that TVA has satisfied the requirements of 10 CFR 50.91(a)(6) for an exigent TS amendment.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

NRC staff reviewed the licensee's amendment application and determined, in accordance with the criteria of 50.92(c), that operation of Browns Ferry, Units 1, 2 and 3 according to the proposed amendment:

1) Does not significantly affect the probability or consequences of any previously evaluated accident. Secondary containment and SGTS are designed to function together to minimize ground level releases of radioactive materials that might result from an accident during reactor power or refueling operations. The reactor building provides secondary containment during reactor operation, when the drywell is

sealed and in service; the reactor building also provides, in effect, primary containment when the reactor is shutdown and the drywell is open, as during refueling. Since the secondary containment is an integral part of the complete containment system, secondary containment is normally required at all times that primary containment is required as well as during refueling. The proposed TS will eliminate the requirement to maintain primary and secondary containment integrity together when the reactor is in cold shutdown, vented, and fuel movements are precluded. When the reactor is undergoing refueling operations, the risk of inadvertent releases of radioactive material from potential accidents involving fuel handling, vessel draining, and/or core alterations are minimized while secondary containment and SGTS are operable. However, when these systems are not operable, the risks of fuel handling and reactivity insertion accidents are minimized because fuel movement and core alterations are excluded whenever secondary containment is not operable or insufficient SGTS capacity is available.

The proposed amendment request provides specific actions to be taken if the LCOs cannot be met for the SGTS or secondary containment system that are consistent with the STS for General Electric (GE) designed plants, as is BFN. Both the current and proposed TS require an orderly reactor shutdown (if applicable) and controlled suspension of all activities that have the potential for leading to an accident.

The Fuel Handling Accident and the reactivity insertion accidents are the previously evaluated accidents in Chapter 14 of the BFN Final Safety Analysis Report. The proposed changes do not change the level of protection against these accidents and, therefore, do not affect the probability or consequences of any accident previously evaluated.

2) Does not create the possibility of a new or different kind of accident from any accident previously evaluated in the BFN Final Safety Analysis Report. The changes clarify what to do when either the SGTS or secondary containment LCOs cannot be met. The resulting actions to preclude accidents that may cause a radioactive material release are consistent with current industry practice and the Standard TS requirements for GE Boiling Water Reactors.

   Furthermore, the proposed changes do not add equipment to the plant and do not allow any mode of plant operation which could initiate the possibility of a new or different kind of accident from any accident previously evaluated.

3) Does not involve a significant reduction in a margin of safety. The changes are consistent with the existing BFN Safety Analysis and GE STS. No adverse safety impact or reduction in safety margins occurs due to the proposed changes. The TS will continue to require an orderly shutdown of the operating reactor and cessation of all activities with the potential accident risk to release radioactive material if secondary containment in SGTS LCOs cannot be met. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Accordingly, the Commission concludes that this amendment request does not involve significant hazards considerations.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes to requirements with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20. The staff has determined these amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and 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, these 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.

6.0 STATE CONSULTATION

The Commission made a proposed determination that the amendment involved no significant hazards consideration which was published in the Federal Register (55 FR 9789) and consulted with the State of Alabama. No public comments were received and the State of Alabama did not have any comments. The State of Alabama was also informed of the staff's final no significant hazards considerations determination and intent to issue a license amendment.

7.0 CONCLUSIONS

The staff has concluded, based on the consideration discussed above, that: (1) the amendments do not involve significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (3) such activities will be conducted in compliance with the Commission's regulations, and (4) the issuance of the amendments will not be inimical to the common defense and security, nor to the health of the public.

Principal Contributor: P. Hearn

Dated: March 30, 1990