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Docket Nos. 50-269
50-270
and 50-287

June 16, 1977

Duke Power Company
ATTN: Mr. William O. Parker, Jr.
Vice President
Steam Production
Post Office Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Gentlemen:

The Commission has issued the enclosed Amendments Nos. 41, 41 and 38 for Licenses Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station, Units Nos. 1, 2 and 3. These amendments consist of changes to the station's common Technical Specifications in response to your application dated November 1, 1976.

The amendments revise the common Technical Specifications to (1) allow a 72 hour period to restore operability of at least one of two redundant sources of concentrated boric acid and a one hour period to restore the borated water storage tank to operability if they should become unavailable, (2) allow a two hour period for restoration of control rod group overlap, (3) provide a clearer definition of xenon reactivity passing its final peak prior to increasing reactor power above the power level cutoff, (4) allow use of a key-operated shutdown bypass switch during power operation, (5) provide a change in reporting requirements whenever a measured level of radioactivity in any environmental medium exceeds the control station value, and (6) provide administrative changes.

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

Original Signed by

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures and cc's:
See next page

OFFICE ➤	ORB#1	OELD	ORB#1			
x27433:tsh SURNAME ➤	DNeighbors		ASchwencer			
DATE ➤	5/20/77	5/ /77	5/ /77			

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

1. Amendment No. 41 to DPR-38
2. Amendment No. 41 to DPR-47
3. Amendment No. 38 to DPR-55
4. Safety Evaluation
5. Notice of Issuance

cc's w/enclosures:
See next page

OFFICE ➤						
SURNAME ➤						
DATE ➤						

cc: Mr. William L. Porter
Duke Power Company
P. O. Box 2178
422 South Church Street
Charlotte, North Carolina 28242

J. Micheal McGarry, III, Esquire
DeBevoise & Liberman
700 Shoreham Building
806-15th Street, NW.,
Washington, D.C. 20005

Oconee Public Library
201 South Spring Street
Walhalla, South Carolina 29691

Honorable James M. Phinney
County Supervisor of Oconee County
Walhalla, South Carolina 29621

Office of Intergovernmental Relations
116 West Jones Street
Raleigh, North Carolina 27603

Chief, Energy Systems
Analyses Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Region IV Office
ATTN: EIS COORDINATOR
345 Coutland Street, N. E.
Atlanta, Georgia 30308

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

DUKE POWER COMPANY

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO OPERATING OPERATING LICENSE

Amendment No. 41
License No. DPR-38

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duke Power Company (the licensee) dated November 1, 1976, 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 3.B of Facility License No. DPR-38 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 41, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 30 days after the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 16, 1977

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 41 TO DPR-38

AMENDMENT NO. 41 TO DPR-47

AMENDMENT NO. 38 TO DPR-55

DOCKETS NOS. 50-269, 50-270 AND 50-287

Revise Appendix A as follows:

Remove the following pages and insert revised identically numbered pages.

3.2-1
3.3-3
3.5-1
3.5-2
3.5-8
3.5-9
3.5-11
6.1-7
6.4-1
6.5-1
6.5-2
6.6-6
Table 4.11-3

Add the following new page.

3.2-1a

3.2 HIGH PRESSURE INJECTION AND CHEMICAL ADDITION SYSTEMS

Applicability

Applies to the high pressure injection and the chemical addition systems.

Objective

To provide for adequate boration under all operating conditions to assure ability to bring the reactor to a cold shutdown condition.

Specification

The reactor shall not be critical unless the following conditions are met:

3.2.1 Two high pressure injection pumps per unit are operable except as specified in 3.3.

3.2.2 One source per unit of concentrated soluble boric acid in addition to the borated water storage tank is available and operable. This can be either:

a. The boric acid mix tank containing at least the equivalent of 450 ft^3 of 10,600 ppm boron as boric acid solution at a temperature of at least 10°F above the crystallization temperature. System piping and valves necessary to establish a flow path from the tank to the high pressure injection system shall also be operable and shall have at least the same temperature requirement as the boric acid mix tank. One associated boric acid pump shall be operable. If the daily average air temperature in the vicinity of this tank and associated flow path piping is less than 85°F, at least one channel of heat tracing shall be in operation for this tank and piping.

b. The concentrated boric acid storage tank containing at least the equivalent of 550 ft^3 of 8700 ppm boron as boric acid solution with a temperature of at least 10°F above the crystallization temperature. System piping and valves necessary to establish a flow path from the tank to the high pressure injection system shall be operable and shall have the same temperature requirement as the concentrated boric acid storage tank. One associated boric acid pump shall be operable. If the daily average air temperature in the vicinity of this tank is less than 70°F, at least one channel of heat tracing shall be in operation for this tank and associated piping.

Transfer between the boric acid mix tank and the concentrated boric acid storage tank is permitted, provided the contents of one tank meet the requirements specified above immediately prior to and after transfer. If neither source of concentrated soluble boric acid in Specification 3.2.2 a and b is available, but the borated water storage tank is available and operable, at least one of these sources shall be restored to operability within 72 hours or the reactor shall be placed in a hot shutdown condition and be borated to a shutdown margin equivalent to 1% $\frac{\Delta K}{K}$ at 200°F within the next 12 hours; if at least one source of concentrated boric acid has not

been restored to operability within the next 7 days the reactor shall be placed in a cold shutdown condition within an additional 30 hours.

If at least one source of soluble boric acid as indicated by Specification 3.2.2 a and b is available but the borated water storage tank is neither available nor operable, that tank shall be restored to operability within one hour or the reactor shall be placed in a hot shutdown condition within 6 hours and in a cold shutdown condition within an additional 30 hours.

3.3.6 Exceptions to 3.5 shall be as follows:

(a) Both core flooding tanks shall be operational above 800 psig.

(b) Both motor-operated valves associated with the core flooding tanks shall be fully open above 800 psig.

(c) One pressure instrument channel and one level instrument channel per core flood tank shall be operable above 800 psig.

(d) One reactor building cooling fan and associated cooling unit shall be permitted to be out of service for seven days provided both reactor building spray pumps and associated spray nozzle headers are in service at the same time.

(e) If the requirements of Specification 3.3.1(f) are not met, the borated water storage tank shall be considered unavailable and action shall be initiated in accordance with Specification 3.2.

3.3.7 Prior to initiating maintenance on any of the components, the duplicate (redundant) component shall be tested to assure operability.

Bases

The requirements of Specification 3.3 assure that, before the reactor can be made critical, adequate engineered safety features are operable. Two high pressure injection pumps and two low pressure injection pumps are specified. However, only one of each is necessary to supply emergency coolant to the reactor in the event of a loss-of-coolant accident. Both core flooding tanks are required as a single core flood tank has insufficient inventory to reflood the core.(1)

The borated water storage tanks are used for two purposes:

(a) As a supply of borated water for accident conditions.

(b) As a supply of borated water for flooding the fuel transfer canal during refueling operation.(2)

Three-hundred and fifty thousand (350,000) gallons of borated water (a level of 46 feet in the BWST) are required to supply emergency core cooling and reactor building spray in the event of a loss-of-core cooling accident. This amount fulfills requirements for emergency core cooling. The borated water storage tank capacity of 388,000 gallons is based on refueling volume requirements. Heaters maintain the borated water supply at a temperature to prevent freezing. The boron concentration is set at the amount of boron required to maintain the core 1 percent subcritical at 70°F without any control rods in the core. This concentration is 1,338 ppm boron while the minimum value specified in the tanks is 1,800 ppm boron.

The spray system utilizes common suction lines with the low pressure injection system. If a single train of equipment is removed from either system, the other train must be assured to be operable in each system.

When the reactor is critical, maintenance is allowed per Specification 3.3.5 and 3.3.6 provided requirements in Specification 3.3.7 are met which assure operability of the duplicate components. Operability of the specified com-

3.5 INSTRUMENTATION SYSTEMS

3.5.1 Operational Safety Instrumentation

Applicability

Applies to unit instrumentation and control systems.

Objective

To delineate the conditions of the unit instrumentation and safety circuits necessary to assure reactor safety.

Specifications

3.5.1.1 The reactor shall not be in a startup mode or in a critical state unless the requirements of Table 3.5.1-1, Columns A and B are met.

3.5.1.2 In the event that the number of protective channels operable falls below the limit given under Table 3.5.1-1, Columns A and B; operation shall be limited as specified in Column C.

3.5.1.3 For on-line testing or in the event of a protective instrument or channel failure, a key-operated channel bypass switch associated with each reactor protective channel may be used to lock the channel trip relay in the untripped state. Status of the untripped state shall be indicated by a light. Only one channel bypass key shall be accessible for use in the control room. Only one channel shall be locked in this untripped state or contain a dummy bistable at any one time.

3.5.1.4 For on-line testing or maintenance during reactor power operation, a key-operated shutdown bypass switch associated with each reactor protective channel may be used in conjunction with a key-operated channel bypass switch as limited by 3.5.1.3. Status of the shutdown bypass switch shall be indicated by a light.

3.5.1.5 During startup when the intermediate range instruments come on scale, the overlap between the intermediate range and the source range instrumentation shall not be less than one decade. If the overlap is less than one decade, the flux level shall not be greater than that readable on the source range instruments until the one decade overlap is achieved.

3.5.1.6 In the event that one of the trip devices in either of the sources supplying power to the control rod drive mechanisms fails in the untripped state, the power supplied to the rod drive mechanisms through the failed trip device shall be manually removed within 30 minutes. The condition will be corrected and the remaining trip devices shall be tested within eight hours. If the condition is not corrected and the remaining trip devices tested within the eight hour period, the reactor shall be placed in the hot shutdown condition within an additional four hours.

Bases

Every reasonable effort will be made to maintain all safety instrumentation in operation. A startup is not permitted unless three power range neutron instrument channels and two channels each of the following are operable: four reactor coolant temperature instrument channels, four reactor coolant flow instrument channels, four reactor coolant pressure instrument channels, four pressure-temperature instrument channels, four flux-imbalance flow instrument channels, four power-number of pumps instrument channels, and high reactor building pressure instrument channels. The engineered safety features actuation system must have two analog channels functioning correctly prior to a startup.

Operation at rated power is permitted as long as the systems have at least the redundancy requirements of Column B (Table 3.5.1-1). This is in agreement with redundancy and single failure criteria of IEEE 279 as described in FSAR Section 7.

There are four reactor protective channels. A fifth channel that is isolated from the reactor protective system is provided as a part of the reactor control system. Normal trip logic is two out of four. Required trip logic for the power range instrumentation channels is two out of three. Minimum trip logic on other channels is one out of two.

The four reactor protective channels were provided with key operated bypass switches to allow on-line testing or maintenance on only one channel at a time during power operation. Each channel is provided alarm and lights to indicate when that channel is bypassed. There will be one reactor protective system bypass switch key permitted in the control room. That key will be under the administrative control of the Shift Supervisor. Spare keys will be maintained in a locked storage accessible only to the station Manager.

Each reactor protective channel key operated shutdown bypass switch is provided with alarm and lights to indicate when the shutdown bypass switch is being used. There are four shutdown bypass keys in the control room under the administrative control of the Shift Supervisor. The use of a key operated shutdown bypass switch for on-line testing or maintenance during reactor power operation has no significance when used in conjunction with a key operated channel bypass switch since the channel trip relay is locked in the untripped state. The use of a key operated shutdown bypass switch alone during power operation will cause the channel to trip. When the shutdown bypass switch is operated for on-line testing or maintenance during reactor power operation, reactor power and RCS pressure limits as specified in Table 2.3-1A, B, or C are not applicable.

The source range and intermediate range nuclear instrumentation overlap by one decade of neutron flux. This decade overlap will be achieved at 10^{-10} amps on the intermediate range instrument.

Power is normally supplied to the control rod drive mechanisms from two separate parallel 600 volt sources. Redundant trip devices are employed in each of these sources. If any one of these trip devices fails in the untripped state on-line repairs to the failed device, when practical, will be made, and the remaining trip devices will be tested. Four hours is ample time to test the remaining trip devices and in many cases make on-line repairs.

REFERENCE

FSAR, Section 7.1

(3) Except as provided in specification 3.5.2.[illegible], the reactor shall be brought to the hot shutdown condition within four hours if the quadrant power tilt is not reduced to less than
3.41% Unit 1 within 24 hours.
3.41% Unit 2
4.92% Unit 3

b. If the quadrant tilt exceeds +3.41% Unit 1 and there is simultaneous
3.41% Unit 2
4.92% Unit 3
indication of a misaligned control rod per Specification 3.5.2.2, reactor operation may continue provided power is reduced to 60% of the thermal power allowable for the reactor coolant pump combination.

c. Except for physics test, if quadrant tilt exceeds 9.44% Unit 1,
9.44% Unit 2
11.07% Unit 3
a controlled shutdown shall be initiated immediately, and the reactor shall be brought to the hot shutdown condition within four hours.

d. Whenever the reactor is brought to hot shutdown pursuant to 3.5.2.4.a(3) or 3.5.2.4.c above, subsequent reactor operation is permitted for the purpose of measurement, testing, and corrective action provided the thermal power and the power range high flux setpoint allowable for the reactor coolant pump combination are restricted by a reduction of 2 percent of full power for each 1 percent tilt for the maximum tilt observed prior to shutdown.

e. Quadrant power tilt shall be monitored on a minimum frequency of once every two hours during power operation above 15 percent of rated power.

3.5.2.5 Control Rod Positions

a. Technical Specification 3.1.3.5 does not prohibit the exercising of individual safety rods as required by Table 4.1-2 or apply to inoperable safety rod limits in Technical Specification 3.5.2.2.

b. Except for physics tests, operating rod group overlap shall be 25% ± 5% between two sequential groups. If this limit is exceeded, corrective measures shall be taken immediately to achieve an acceptable overlap. Acceptable overlap shall be attained within two hours, or the reactor shall be placed in a hot shutdown condition within an additional 12 hours.

c. Except for physics tests or exercising control rods, the control rod withdrawal limits are specified on Figures 3.5.2-1A1 and 3.5.2-1A2, (Unit 1), 3.5.2-1B1, 3.5.2-1B2 and 3.5.2-1B3 (Unit 2), and 3.5.2-1C1, 3.5.2-1C2, and 3.5.2-1C3 (Unit 3) for four pump operation and on Figures 3.5.2-2A1, 3.5.2-2A2 (Unit 1), 3.5.2-2B1, 3.5.2-2B2, 3.5.2-2B3 (Unit 2), and 3.5.2-2C (Unit 3) for three or

two pump operation. If the control rod position limits are exceeded, corrective measures shall be taken immediately to achieve an acceptable control rod position. Acceptable control rod position shall then be attained within two hours. The minimum shutdown margin required by Specification 3.5.2.1 shall be maintained at all times.

d. Except for physics tests, power shall not be increased above the power level cutoff as shown on Figures 3.5.2-1A1, 3.5.2-1A2 (Unit 1), 3.5.2-1B1, 3.5.2-1B2, and 3.5.2-1B3 (Unit 2), and 3.5.2-1C1, 3.5.2-1C2, 3.5.2-1C3 (Unit 3), unless the following requirements are met.

(1) The xenon reactivity shall be within 10 percent of the value for operation at steady-state rated power.

(2) The xenon reactivity worth has passed its final maximum or minimum peak during its approach to its equilibrium value for operation at the power level cutoff.

3.5.2.6 Reactor power imbalance shall be monitored on a frequency not to exceed two hours during power operation above 40 percent rated power. Except for physics tests, imbalance shall be maintained within the envelope defined by Figures 3.5.2-3A1, 3.5.2-3A2, 3.5.2-3B1, 3.5.2-3B2, 3.5.2-3B3, and 3.5.2-3C. If the imbalance is not within the envelope defined by Figure 3.5.2-3A1, 3.5.2-3A2, 3.5.2-3B1, 3.5.2-3B2, 3.5.2-3B3, and 3.5.2-3C, corrective measures shall be taken to achieve an acceptable imbalance. If an acceptable imbalance is not achieved within two hours, reactor power shall be reduced until imbalance limits are met.

3.5.2.7 The control rod drive patch panels shall be locked at all times with limited access to be authorized by the manager or his designated alternate.

Control rod groups are withdrawn in sequence beginning with Group 1. Groups 5, 6, and 7 are overlapped 25 percent. The normal position at power is for Groups 6 and 7 to be partially inserted.

The quadrant power tilt limits set forth in Specification 3.5.2.4 have been established with consideration of potential effects of rod bowing (Units 1 and 2 only) and fuel densification to prevent the linear heat rate peaking increase associated with a positive quadrant power tilt during normal power operation from exceeding 5.10% for Unit 1. The limits shown in Specification 3.5.2.4

5.10% for Unit 2
7.36% for Unit 3

are measurement system independent. The actual operating limits, with the appropriate allowance for observability and instrumentation errors, for each measurement system are defined in the station operating procedures.

The quadrant tilt and axial imbalance monitoring in Specification 3.5.2.4 and 3.5.2.6, respectively, normally will be performed in the process computer. The two-hour frequency for monitoring these quantities will provide adequate surveillance when the computer is out of service.

Allowance is provided for withdrawal limits and reactor power imbalance limits to be exceeded for a period of two hours withour specification violation. Acceptable rod positions and imbalance must be achieved within the two-hour time period or appropriate action such as a reduction of power taken.

Operating restrictions are included in Technical Specification 3.5.2.5d to prevent excessive power peaking by transient xenon. The xenon reactivity must be beyond its final maximum or minimum peak and approaching its equilibrium value at the power level cutoff.

REFERENCES

[1] FSAR, Section 3.2.2.1.2

[2] FSAR, Section 14.2.2.2

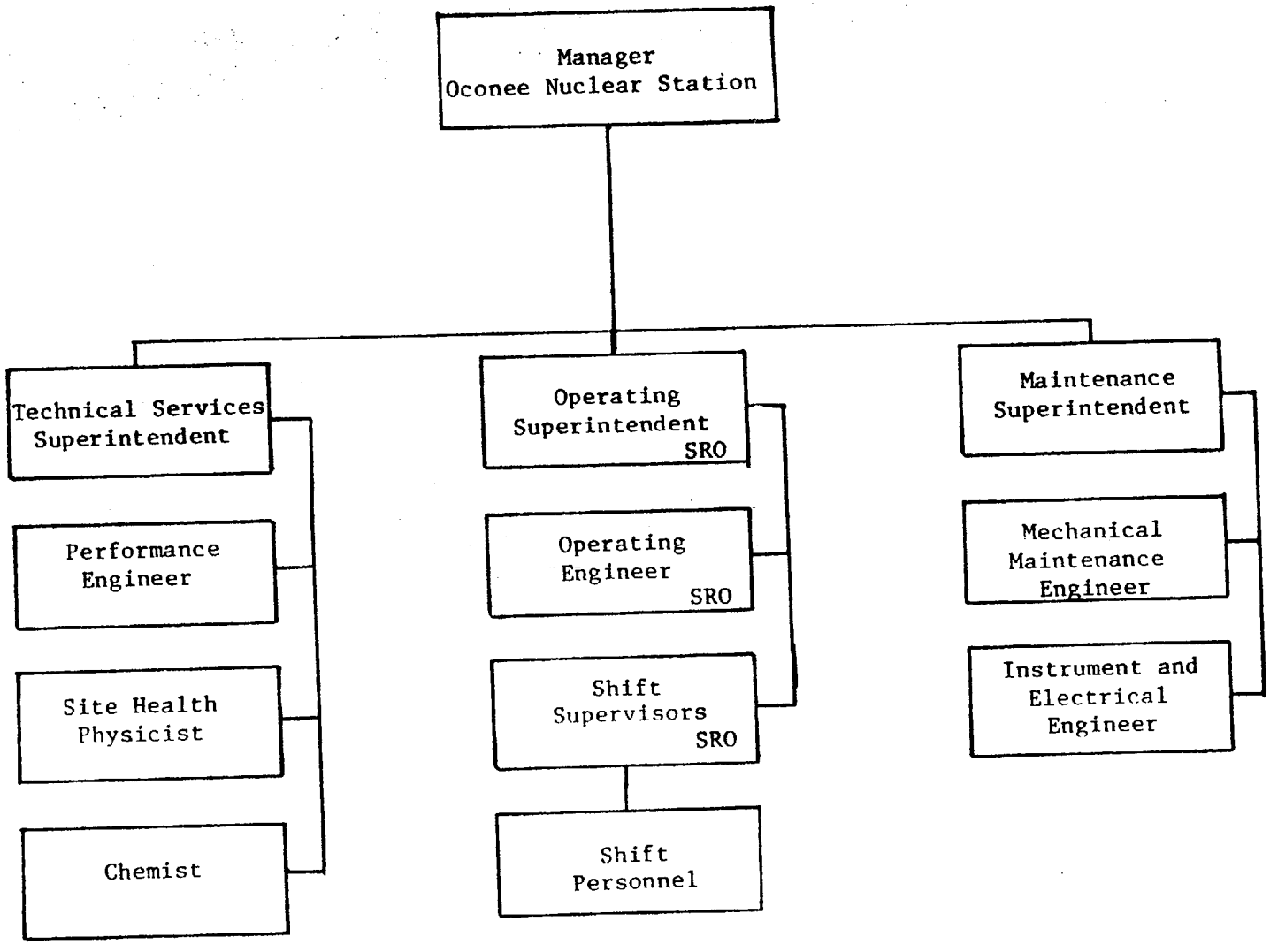
[3] FSAR, SUPPLEMENT 9

[4] B&W FUEL DENSIFICATION REPORT

BAW-1409 (UNIT 1)

BAW-1396 (UNIT 2)

BAW-1400 (UNIT 3)



OCONEE NUCLEAR STATION
STATION ORGANIZATION CHART
FIGURE 6.1-1

6.4 STATION OPERATING PROCEDURES

Specification

6.4.1 The station shall be operated and maintained in accordance with approved procedures. Written procedures with appropriate check-off lists and instructions shall be provided for the following conditions:

a. Normal startup, operation and shutdown of the complete facility and of all systems and components involving nuclear safety of the facility.

b. Refueling operations.

c. Actions taken to correct specific and foreseen potential malfunctions of systems or components involving nuclear safety and radiation levels, including responses to alarms, suspected primary system leaks and abnormal reactivity changes.

d. Emergency procedures involving potential or actual release of radioactivity.

e. Preventive or corrective maintenance which could affect nuclear safety or radiation exposure to personnel.

f. Station survey following an earthquake.

g. Radiation control procedures.

h. Operation of radioactive waste management systems.

i. Control of pH in recirculated coolant after loss-of-coolant accident. Procedure shall state that pH will be measured and the addition of appropriate caustic to coolant will commence within 30 minutes after switchover to recirculation mode of core cooling to adjust the pH to a range of 7.0 to 8.0 within 24 hours.

j. Nuclear safety-related periodic test procedures.

k. Long-term emergency core cooling systems. Procedures shall include provision for remote or local operation of system components necessary to establish low pressure injection within 15 minutes after a line break.

6.4.2 Quarterly selected drills shall be conducted on site emergency procedures including assembly preparatory to evacuation off site and a check of the adequacy of communications with off-site support groups.

6.4.3 A respiratory protective program approved by the Commission shall be in force.

h. By-product material inventory records.

i. Minutes of Nuclear Safety Review Board meetings.

j. Training records.

k. Test results, in units of microcuries, for leak tests performed pursuant to Specification 4.16.

6.5 STATION OPERATING RECORDS

Specification

6.5.1 The following records shall be prepared and permanently retained in a manner convenient for review:

a. Records of modifications to the station as described in the FSAR.

b. Special nuclear material physical inventory records.

c. Special nuclear material isotopic inventory records.

d. Radiation monitoring records, including records of radiation and contamination surveys.

e. Records of off-site environmental surveys.

f. Personnel radiation exposure records as required by 10CFR20.

g. Records of radioactive releases and waste disposal.

h. Records of reactor coolant system in-service inspections.

i. Preoperational testing records.

j. Records of special reactor tests or experiments.

k. Records of changes to safety-related operating procedures.

6.5.2 The following records shall be prepared and retained for a minimum of six (6) years in a manner convenient for review:

a. Switchboard Record.

b. Reactor Operations Logbook.

c. Shift Supervisor Logbook.

d. Maintenance histories for station safety-related structures, systems and components.

e. Records of safety-related inspections, other than reactor coolant system in-service inspections.

f. Records of reportable occurrences.

g. Periodic testing records and records of other periodic checks, calibrations, etc. performed in accordance with surveillance requirements for safety-related parameters, structures, systems and components.

b. Thirty-Day Written Reports

The types of events listed below shall be the subject of written reports to the Director, Office of Inspection and Enforcement, Region II, within 30 days of discovery of the event. (Copy to the Director, Office of Management Information and Program Control)

(1) Reactor protection system or engineered safety feature instrument settings which are found to be less conservative than those established by the technical specifications but which do not prevent the fulfillment of the functional requirements of affected systems.

(2) Conditions leading to operation in a degraded mode permitted by a limiting condition for operation or shutdown required by a limiting condition for operation.

(3) Observed inadequacies in the implementation of administrative or procedural controls during operation of a unit which could cause reduction of degree of redundancy provided in the Reactor Protective System or Engineered Safety Feature Systems.

6.6.2.2 Environmental Monitoring

a. If individual milk samples show I-131 concentrations of 10 picocuries per liter or greater, a plan shall be submitted within one week advising the NRC of the proposed action to ensure the plant related annual doses will be within the design objective of 15 mrem/yr to the thyroid of any individual.

b. If milk samples collected over a calendar quarter show average concentrations of 4.8 picocuries per liter or greater, a plan shall be submitted within 30 days advising the NRC of the proposed action to ensure the plant related annual doses will be within the design objective of 15 mrem/yr to the thyroid of any individual.

c. If, during any annual report period, a measured level of radioactivity in any environmental medium other than those associated with gaseous radioiodine releases or liquid effluent releases exceeds ten times the the control station value, a written notification will be submitted within one week advising the NRC of this condition. This notification should include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous result.

d. If, during any annual report period, a measured level of radioactivity in any environmental medium associated with liquid effluent releases exceeds fifty times the control station value for sampling points at or upstream of location 000.7 or ten times the control station value for sampling points downstream of location 000.7, a written notification will be submitted within one week advising the NRC of this condition. This notification should include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous result.

TABLE 4.11-1

OCONEE ENVIRONMENTAL RADIOACTIVITY MONITORING PROGRAM

COLLECTION FREQUENCY

Weekly	W
Monthly	M
Quarterly	Q
Semiannually	S
Triennially	T

		TYPE OF SAMPLE													
		WELL-WATER Residence	FINISHED WATER Water Supply	RAW WATER Water Supply	SURFACE WATER River, Lakes	RAIN, SETTLED DUST Fallout	AIR Particulate, Iodine	VEGETATION Pasture grass, forage	VEGETATION Commercial crops	VEGETATION Aquatic	BOTTOM SEDIMENT Water Supply & Lakes	Radiation Dose & Rate TLD and Instrument	Fish Lines	Milk Local Dairies	Milk
000	Site: Visitors Center, Station #1					M	W	Q				Q			
000.1	Station #2					M						Q			
000.2	Station #3					M						Q			
000.3	Bridge N of Site on Hwy 183 Connecting Canal				M										
[illegible]	Near Old Effluent Release Point									S	S				
[illegible]	Lake Keowee Including Lake Keowee				M					S	S		S		
[illegible]	Lake Keowee Cooling Water Discharge				M						S	C			
[illegible]	Bridge on Hwy 183 Existing				M						S				
[illegible]	Hwy 183											Q			
[illegible]	Spillway Wall											Q			
[illegible]	[illegible] 183											Q			
[illegible]	Construction Living Quarters											Q			
[illegible]	Boat Dock - Visitors Center											Q			
[illegible]	Keowee Hydro Intake											Q			
[illegible]	Site Fence, North											Q			
[illegible]	Site Fence, North														
[illegible]	Site Fence, West														
[illegible]	Site Fence, West											Q			
[illegible]	Site Fence, South														
001	SALEM: Vol. Fire Dept. Lot											Q			
[illegible]	WALHALLA: Branch Rd. Sub-Station					M						Q			
[illegible]	5 Miles W of Site on Hwy 183							Q							
[illegible]	PENDLE: High School Area Hwy 133 1/4 mile South											C			
[illegible]	SENECA: Oconee Memorial Hospital											Q			
[illegible]	Water Supply, Lake Keowee Intake		M	M											
[illegible]	WESTON: Abandoned High School off S.C. 130											Q			
[illegible]	Hwy 27 at Bridge				M					S	S				
[illegible]	SUMMERTON: Meteorology Plot					M	W	Q				C			
[illegible]	Water Supply		M	M											
[illegible]	Intake Hartwell Reservoir K-3										S			Q	
[illegible]	Dairy											Q			
[illegible]	CENTRAL, S.C.: Transmission Tower Base Hwy 93											C			
[illegible]	LIBERTY, S.C.: Branch Office Yard											C			
[illegible]	SIX MILE, S.C.: Microwave Tower Hwy 137						W					C			
010	PICKENS, S.C.: Branch Office Yard					M						Q			
011	FLOATING STATION: Warpath Boat Landing											Q			
012	ANDERSON, S.C.: Water Supply		M	M											
013	HARTWELL RESERVOIR: 5.8 Miles S of Keowee Dam				M								S		
[illegible]	Old Highway 183 at Lake	Q					W								
015	Farms within a 5-Mile Radius of Site	Q						Q	Q*					W	

* If sufficient quantities are available for sampling.

Amendment Nos. 41, 41 & 38

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

DUKE POWER COMPANY

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT NO. 2

AMENDMENT TO OPERATING OPERATING LICENSE

Amendment No. 41
License No. DPR-47

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duke Power Company (the licensee) dated November 1, 1976, 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 3.B of Facility License No. DPR-47 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No.41 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 30 days after the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 16, 1977

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

DUKE POWER COMPANY

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT NO. 3

AMENDMENT TO OPERATING OPERATING LICENSE

Amendment No. 38
License No. DPR-55

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Duke Power Company (the licensee) dated November 1, 1976, 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 3.B of Facility License No. DPR-55 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 38 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 30 days after the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 16, 1977

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 41 TO LICENSE NO. DPR-38

AMENDMENT NO. 41 TO LICENSE NO. DPR-47

AND AMENDMENT NO. 38 TO LICENSE NO. DPR-55

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3

DOCKETS NOS. 50-269, 50-270 AND 50-287

Introduction

By letter dated November 1, 1976, Duke Power Company (the licensee) submitted an application for amendment to Facility License Nos. DPR-38, DPR-47 and DPR-55 for the Oconee Nuclear Station. The application proposes to revise the Technical Specifications common to these licenses in several areas.

Discussion

The following changes to the Technical Specifications have been proposed by the licensee:

1. Technical Specification 3.2.2 would be revised to allow a 72 hour period of time to restore operability of a source of concentrated boric acid, and a one hour period of time to restore the borated water storage tank to operability.

2. Technical Specification 3.5.2.5.b would be revised to allow a two hour period for restoration of control rod group overlap.

3. Technical Specification 3.5.2.5.d(2) concerning xenon reactivity would be revised to provide a clearer understanding of the intent of the specification.

4. Technical Specification 3.5.1.4 would be revised to permit the use of the key-operated bypass switch during power operation.

5. Technical Specification 6.6.2.2.c and d would be revised to delete certain reporting requirements when a measured level of radioactivity in any environmental medium exceeds the control station value by a specified amount.

6. Technical Specifications 3.5.2.7, 6.4.1, 6.4.3, 6.5.2, Table 4.11-1, and Figure 6.1-1 would be revised to reflect administrative changes.

Evaluation

1. Operability of Boric Acid Sources

The existing Technical Specifications require redundant sources of concentrated soluble boric acid (CSBA) for each of the Oconee Units. These sources include borated water storage tanks (BWST) and either the boric acid mix tanks (BAMT) or the concentrated boric acid storage tank (CBAST). Any one of these tanks is sufficient to borate the reactor coolant system (RCS) to a 1% $\Delta k/k$ shutdown margin in a cold, end-of-life condition.

As the Technical Specifications are now written, a second source of CSBA shall be available and operable whenever the reactor is critical. This second source is in addition to the BWST which must also be available and operable.

The licensee initially proposed that Technical Specification 3.2.2 be revised to allow time to restore sources of CSBA to operable conditions. We have discussed modifications to the proposed Technical Specifications which are agreeable to the licensee and are acceptable to us.

The bases for our finding the proposal, as modified, satisfactory are as follows:

A. The proposed Technical Specications as modified require a hot shutdown within 12 hours if the second source of CSBA can't be restored in 72 hours, and in addition to the hot shutdown, require the reactor to be borated to an equivalent 1% $\Delta k/k$ shutdown margin at 200°F. The need for this extra shutdown margin is justified since the second source of CSBA normally used for boration during cooldowns is unavailable. If an uncontrolled cooldown were to occur, a criticality accident could result if the reactor were not sufficiently borated before the transient started.

B. The proposed Technical Specifications as modified also limit the period for which the plant may remain in a hot shutdown condition while attempting to restore the second source of CSBA to 7 days. Further, if the second source of CSBA can't be regained in this time period, the reactor must be brought to a cold shutdown condition within the next 30 hours.

Although the Oconee plants are capable of a faster shutdown rate, the licensee expressed a strong conviction that a 12 hour period to attain a hot shutdown condition would be preferable and safe. We concur that a 12 hour period is safe. However, in the event that the BWST is not operable, we require the reactor to be placed in a hot standby condition within 6 hours since the normal source of ECCS water has been lost.

In summary, we have agreed upon the following requirements:

A. If the second source of CSBA is not restored to operability within 72 hours, the reactor shall be in a hot shutdown condition within an additional 12 hours.

B. While in a hot shutdown condition, the reactor shall be borated to a shutdown margin equivalent to 1% $\Delta k/k$ at 200°F.

C. The second source of CSBA must be restored within 7 days, or the reactor shall be placed in a cold shutdown condition within an additional 30 hours.

D. If the second source of CSBA is available, but the BWST becomes unavailable or inoperable, it shall be restored within 1 hour, or the reactor shall be placed in a hot shutdown condition within an additional 6 hours, and a cold shutdown condition within an additional 30 hours.

Based on our review of the proposed changes as modified, we conclude that they are acceptable.

2. <u>Control Rod Group Overlap</u>

The reactor has 8 groups of control rods (4 safety groups 2 regulating groups, 1 xenon transient override group and 1 axial power shaping group). Some of these groups are designed to be sequentially withdrawn. The present Technical Specifications allow these groups

an overlap of 25% ± 5%, with no required action specified if this limit is exceeded. If the limit is exceeded, immediate action should be taken to establish a satisfactory overlap. Further, if the overlap problem cannot be corrected within 2 hours, then the reactor should be placed in a hot shutdown condition within the next several hours.

We have discussed this need to proceed to hot shutdown with the licensee and have agreed upon the following revised proposed change:

> If the group overlap of 25% ± 5% cannot be regained in 2 hours, the reactor should be placed in a hot shutdown condition within an additional 12 hours.

Based on our review of the proposed change, we conclude that it is acceptable.

3. Changes in Power Level vs. Xenon Transients

A reactor must be kept below a certain core thermal power called the power level cutoff (PLC), unless several requirements are satisfied. One of the requirements is that the amount of xenon reactivity in the core must have passed its final maximum (or minimum) quantity, and be approaching the amount associated with steady state operation at the PLC.

Since the present Technical Specifications do not clearly state this requirement, the licensee has proposed new wording. We find the licensee's proposed wording to be an acceptable clarification.

4. Key-Operated Shutdown Bypass Switch

The four reactor protective channels are each provided with two key-operated bypass switches, a channel bypass switch and a shutdown bypass switch.

The shutdown bypass switch enables the trips for power imbalance/flow, power/RC pumps, and reactor pressure-temperature to be bypassed after the reactor has been shutdown and depressurized to a pressure lower than the low reactor coolant pressure trip point (1800 psig). The purpose of this bypass function is to enable the performance of certain control rod drive tests. A high reactor pressure trip bistable is incorporated in the shutdown bypass circuitry. The set point of this high pressure bistable (1720 psig) is below the low reactor pressure trip point. Thus if pressure is increased with the shutdown bypass in operation, the channel will trip when the shutdown bypass high pressure bistable trips.

There are four shutdown bypass keys in the control room under administrative control. Each reactor protective channel key-operated shutdown bypass switch is provided with alarm and lights to indicate when the shutdown bypass switch is used. The use of the shutdown bypass switch alone during power operation will cause the channel to trip.

The channel bypass switch enables a protective channel to be bypassed without initiating a trip. The key switch is used to bypass a channel during on-line testing. During this test, the reactor protective system will operate in a two-out-of-three coincidence logic.

There is only one accessible channel bypass key in the control room under administrative control and thus only one channel can be locked in the untripped state at any one time. Actuation of this bypass switch is indicated by alarm and lights.

The proposed change, i.e., operation of the shutdown bypass switch in conjunction with the channel bypass switch, will allow the licensee to perform calibration of the reactor protective system during power operation.

Based on our review, we find that:

A. Complete calibration and testing of the reactor protective system, channel by channel, can be performed.

B. The use of a key-operated shutdown bypass switch for on-line testing or maintenance during power operation has no significance when used in conjunction with a key-operated channel bypass switch since the channel trip relay is locked in the untripped state.

C. The use of the key-operated shutdown bypass alone during power operation will cause the channel to trip.

D. Although there are four shutdown bypass keys and only one channel bypass key, if the channel bypass is unlocked prior to unlocking the shutdown bypass during power operation, the channel will trip. Therefore, no more than one channel can be bypassed at any time.

E. The status of all bypasses is indicated by alarms and lights.

F. The above detailed characteristics of the reactor protective system conform with General Design Criterion 21, IEEE Std. 279-1971, and Safety Guide 22 (Regulatory Guide 1.22) dated February 17, 1972.

Based on our review, we conclude that this change is acceptable.

5. Reporting Requirements When a Level of Radioactivity Exceeds a Control Station Value

The licensee initially proposed that reporting required be revised to call for a report when levels of radioactivity exceed 50 times a control value in any environmental medium.

The existing Technical Specifications require a one week report whenever a measured level exceeds ten times the control station value and a 30 day report whenever a measured level exceeds four times the control station value.

The licensee, has agreed to amend the proposed revision as follows:

A. Delete the 30-day reporting requirement when a measured level of radioactivity in any environmental medium other than those associated with radioiodine exceed 4 times the control station value.

B. Change the reporting requirement level from 10 times control to 50 times control for samples in the aquatic environment upstream of the bridge on Highway 183 over the Keowee River (within the prompt dilution area).

The proposed deletion of a reporting requirement associated with a measured level of radioactivity in an environmental sampling medium greater than 4 times the control value is in keeping with current NRC guidelines, Regulatory Guide 4.8. In many instances the variation in background levels could result in measurements that exceed 4 times the control value. Also, these levels are of negligible dose consequence; hence, reporting such levels does not provide any useful or meaningful data.

The proposed change of reporting requirement level from 10 times control to 50 times control for aquatic samples within the prompt dilution area of the Oconee discharge does not reduce the effectiveness of the monitoring program. These samples are taken coincident with radioactive effluent releases. Consequently the levels of radioactivity measured are representative of the effluent release level after a prompt dilution in the Keowee River and are expected to be greater than 10 times control station values. Increasing the reporting level from 10 to 50 times control values will still provide adequate assurance that anomalous levels of radioactivity in aquatic samples are reported while eliminating the reporting of levels that are expected during acceptable releases due to sampling method (coincident with effluent release) and location (prompt dilution area).

We find these changes to be acceptable.

6. Administrative Changes

Several miscellaneous changes have been made which are only administrative in nature. We find these changes to be acceptable.

Environmental Considerations

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a 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, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: June 16, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKETS NOS. 50-269, 50-270 AND 50-287

DUKE POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

AND NEGATIVE DECLARATION

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendments Nos. 41, 41 and 38 to Facility Operating Licenses Nos. DPR-38, DPR-47 and DPR-55, respectively, issued to Duke Power Company (the licensee), which revised Technical Specifications for operation of the Oconee Nuclear Station Units Nos. 1, 2 and 3, (the facilities) located in Oconee County, South Carolina. The amendments are effective within 30 days after the date of issuance.

The amendments revise the common Technical Specifications to (1) allow a 72 hour period to restore operability of at least one of two redundant sources of concentrated boric acid and a one hour period to restore the borated water storage tank to operability if they should become unavailable, (2) allow a two hour period for restoration of control rod group overlap, (3) provide a clearer definition of xenon reactivity passing its final peak prior to increasing reactor power above the power level cutoff, (4) allow use of a key-operated shutdown bypass switch during power operation, (5) provide a change in reporting requirements whenever a measured level of radioactivity in any environmental medium exceeds the control station value, and (6) provide administrative changes.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of the amendments.

For further details with respect to this action, see (1) the application for amendment dated November 1, 1976, (2) Amendments Nos. 41, 41 and 38 to Licenses Nos. DPR-38, DPR-47 and DPR-55 , and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Oconee County Library, 201 South Spring Street, Walhalla, South Carolina 29691. A copy of items (2), (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 16th day of June 1977.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors