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Docket File

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ORB Reading

D. Eisenhut

C. Parrish

D. Neighbors

OELD

OI&E (5)

G. Deegan (8)

B. Scharf

J. Wetmore

ACRS (10)

OPA (Clair Miles)

R. Diggs

NSIC

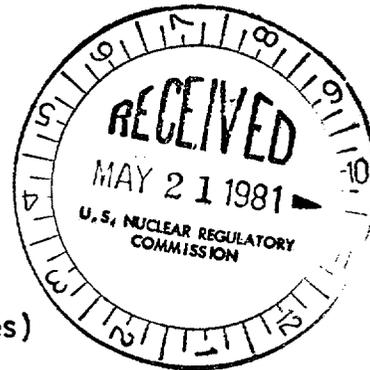
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Chairman, ASLAB

MAY 12 1981

Docket Nos. 50-280 ✓  
and 50-281 ✓

Mr. J. H. Ferguson  
Executive Vice President - Power  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261



Dear Mr. Ferguson:

The Commission has issued the enclosed Amendment No. 67 to Facility Operating License No. DPR-32 and Amendment No. 67 to Facility Operating License No. DPR-37 for the Surry Power Station, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications in response to your application transmitted by letter dated November 14, 1980.

These amendments revise the Technical Specifications to ensure redundancy in decay heat removal capability in all modes of operation and to provide a minimum water level above fuel assemblies during refueling operations.

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

Sincerely,

*Original signed by SU*

Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing

Enclosures:

1. Amendment No. 67 to DPR-32
2. Amendment No. 67 to DPR-37
3. Safety Evaluation
4. Notice of Issuance

cc: w/enclosures  
See next page

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OFFICE	ORB.1	ORB.1	ORB.1	AD/OR	OELD		
SURNAME	CParrish	DNeighbors/rs	SVarga	TNovak			
DATE	4/.../81	4/.../81	4/.../81	4/.../81	4/.../81		

Mr. J. H. Ferguson  
Virginia Electric and Power Company

cc: Mr. Michael W. Maupin  
Hunton and Williams  
Post Office Box 1535  
Richmond, Virginia 23213

Mr. J. L. Wilson, Manager  
P. O. Box 315  
Surry, Virginia 23883

Swem Library  
College of William and Mary  
Williamsburg, Virginia 23185

Donald J. Burke, Resident Inspector  
Surry Power Station  
U. S. Nuclear Regulatory Commission  
Post Office Box 166  
Route 1  
Surry, Virginia 23883

Mr. Sherlock Holmes, Chairman  
Board of Supervisors of Surry County  
Surry County Courthouse, Virginia 23683

Commonwealth of Virginia  
Council on the Environment  
903 Ninth Street Office Building  
Richmond, Virginia 23219

Attorney General  
1101 East Broad Street  
Richmond, Virginia 23219

Mr. James R. Wittine  
Commonwealth of Virginia  
State Corporation Commission  
Post Office Box 1197  
Richmond, Virginia 23209

Director, Criteria and Standards Division  
Office of Radiation Programs (ANR-460)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

U. S. Environmental Protection Agency  
Region III Office  
ATTN: EIS COORDINATOR  
Curtis Building - 6th Floor  
6th and Walnut Streets  
Philadelphia, Pennsylvania 19106



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 67  
License No. DPR-32

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated November 14, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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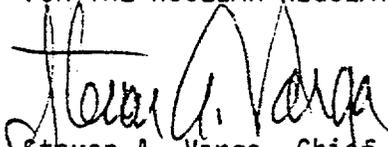
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-32 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 67, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: MAY 12 1981



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 67  
License No. DPR-37

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated November 14, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

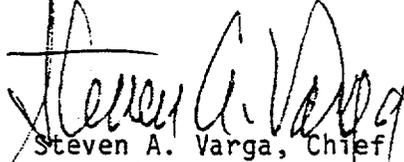
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-37 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 67, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: MAY 12 1981

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. DPR-32

AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. DPR-37

DOCKET NOS. 50-280 AND 50-281

Revise Appendix A as follows:

Remove Pages

3.1-1  
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3.5-2  
3.5-3  
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Insert Pages

3.1-1  
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3.10-6  
3.10-7

### 3.0 LIMITING CONDITIONS FOR OPERATION

#### 3.1 REACTOR COOLANT SYSTEM

##### Applicability

Applies to the operating status of the Reactor Coolant System.

##### Objectives

To specify those limiting conditions for operation of the Reactor Coolant System which must be met to ensure safe reactor operation.

These conditions relate to: operational components, heatup and cooldown, leakage, reactor coolant activity, oxygen and chloride concentrations, minimum temperature for criticality, and reactor coolant system overpressure mitigation.

##### A. Operational Components

##### Specifications

###### 1. Reactor Coolant Pumps

- a. A reactor shall not be brought critical with less than two pumps, in non-isolated loops, in operation.

- b. If an unscheduled loss of one or more reactor coolant pumps occurs while operating below 10% rated power (P-7) and results in less than two pumps in service, the affected plant shall be shutdown and the reactor made subcritical by inserting all control banks into the core. The shutdown rods may remain withdrawn.
  
- c. When the average reactor coolant loop temperature is greater than 350°F, the following conditions shall be met:
  - 1. At least two reactor coolant loops shall be operable.
  
  - 2. At least one reactor coolant loop shall be in operation.
  
- d. When the average reactor coolant loop temperature is less than or equal to 350°F, the following conditions shall be met:
  - 1. A minimum of two non-isolated loops, consisting of any combination of reactor coolant loops or residual heat removal loops, shall be operable, except as specified in Specification 3.10.A.6.
  
  - 2. At least one reactor coolant loop or one residual heat removal loop shall be in operation, except as specified in Specification 3.10.A.6.

- e. Reactor power shall not exceed 50% of rated power with only two pumps in operation unless the overtemperature  $\Delta T$  trip setpoints have been changed in accordance with Section 2.3, after which power shall not exceed 60% with the inactive loop stop valves open and 65% with the inactive loop stop valves closed.
  
- f. When all three pumps have been idle for > 15 minutes, the first pump shall not be started unless: (1) a bubble exists in the pressurizer or (2) the secondary water temperature of each steam generator is less than 50°F above each of the RCS cold leg temperatures.

## 2. Steam Generator

A minimum of two steam generators in non-isolated loops shall be operable when the average reactor coolant temperature is greater than 350°F.

## 3. Pressurizer Safety Valves

- a. One valve shall be operable whenever the head is on the reactor vessel, except during hydrostatic tests.

1. One residual heat removal pump may be out of service, provided immediate attention is directed to making repairs.
2. One residual heat removal heat exchanger may be out of service, provided immediate attention is directed to making repairs.

### Basis

The Residual Heat Removal System is required to bring the Reactor Coolant System from conditions of approximately 350°F and pressures between 400 and 450 psig to cold shutdown conditions. Heat removal at greater temperatures is by the Steam and Power Conversion System. The Residual Heat Removal System is provided with two pumps and two heat exchangers. If one of the two pumps and/or one of the two heat exchangers is not operative, safe operation of the unit is not affected; however, the time for cooldown to cold shutdown conditions is extended.

The NRC requires that the series motorized valves in the line connecting the RHRS and RCS be provided with pressure interlocks to prevent them from opening when the reactor coolant system is at pressure.

### References

FSAR Section 9.3 - Residual Heat Removal System.

### 3.10 REFUELING

#### Applicability

Applies to operating limitations during refueling operations.

#### Objective

To assure that no accident could occur during refueling operations that would affect public health and safety.

#### Specification

A. During refueling operations the following conditions are satisfied:

1. The equipment door and at least one door in the personnel air lock shall be properly closed. For those systems which provide a direct path from containment atmosphere to the outside atmosphere, all automatic containment isolation valves in the unit shall be operable or at least one valve shall be closed in each line penetrating the containment.
2. The Containment Vent and Purge System and the area and airborne radiation monitors which initiate isolation of this system, shall be tested and verified to be operable immediately prior to refueling operations.

3. At least one source range neutron detector shall be in service at all times when the reactor vessel head is unbolted. Whenever core geometry or coolant chemistry is being changed, subcritical neutron flux shall be continuously monitored by at least two source range neutron detectors, each with continuous visual indication in the Main Control Room and one with audible indication within the containment. During core fuel loading phases, there shall be a minimum neutron count rate detectable on two operating source range neutron detectors with the exception of initial core loading, at which time a minimum neutron count rate need be established only when there are eight (8) or more fuel assemblies loaded into the reactor vessel.
  
4. Manipulator crane area radiation levels and airborne activity levels within the containment and airborne activity levels in the ventilation exhaust duct shall be continuously monitored during refueling. A manipulator crane high radiation alarm or high airborne activity level alarm within the containment will automatically stop the purge ventilation fans and automatically close the containment purge isolation valves.
  
5. Fuel pit bridge area radiation levels and ventilation vent exhaust airborne activity levels shall be continuously monitored during refueling. The fuel building exhaust will be continuously bypassed through the iodine filter bank during refueling procedures, prior to discharge through the ventilation vent.

6. At least one residual heat removal pump and heat exchanger shall be operable to circulate reactor coolant. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of core alterations or reactor vessel surveillance inspections.
7. Two residual heat removal pumps and heat exchangers shall be operable to circulate reactor coolant when the water level above the top of the reactor pressure vessel flange is less than 23 feet.
8. At least 23 feet of water shall be maintained over the top of the reactor pressure vessel flange during movement of fuel assemblies.
9. When the reactor vessel head is unbolted, a minimum boron concentration of 2,000 ppm shall be maintained in any filled portion of the Reactor Coolant System and shall be checked by sampling at least once every 8 hours.
10. Direct communication between the Main Control Room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.
11. No movement of irradiated fuel in the reactor core shall be accomplished until the reactor has been subcritical for a period of at least 100 hours.

12. A spent fuel cask or heavy loads exceeding 110 percent of the weight of a fuel assembly (not including fuel handling tool) shall not be moved over spent fuel, and only one spent fuel assembly will be handled at one time over the reactor or the spent fuel pit.
  13. A spent fuel cask shall not be moved into the Fuel Building until such time as the NRC has reviewed and approved the spent fuel cask drop evaluation.
- B. If any one of the specified limiting conditions for refueling is not met, refueling of the reactor shall cease, work shall be initiated to correct the conditions so that the specified limit is met, and no operations which increase the reactivity of the core shall be made.
- C. After initial fuel loading and after each core refueling operation and prior to reactor operation at greater than 75% of rated power, the movable incore detector system shall be utilized to verify proper power distribution.

#### Basis

Detailed instructions, the above specified precautions and the design of the fuel handling equipment, which incorporates built-in interlocks and safety features, provide assurance that an accident, which would result in a hazard to public health and safety, will not occur during refueling operations. When no change is being made in core geometry, one neutron detector is

sufficient to monitor the core and permits maintenance of the out-of-function instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. Containment high radiation levels and high airborne activity levels automatically stop and isolate the Containment Purge System. The fuel building ventilation exhaust is diverted through charcoal filters whenever refueling is in progress. At least one flow path is required for cooling and mixing the coolant contained in the reactor vessel so as to maintain a uniform boron concentration and to remove residual heat.

The shutdown margin established by Specification A-9 maintains the core subcritical, even with all of the control rod assemblies withdrawn from the core. During refueling, the reactor refueling water cavity is filled with approximately 220,000 gal of water borated to at least 2,000 ppm boron. The boron concentration of this water is sufficient to maintain the reactor subcritical by approximately 10%  $\Delta k/k$  in the cold shutdown condition with all control rod assemblies inserted and also to maintain the core subcritical by approximately 1% with no control rod assemblies inserted into the reactor. Periodic checks of refueling water boron concentration assure the proper shutdown margin. Specification A-10 allows the Control Room Operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

In addition to the above safeguards, interlocks are used during refueling to assure safe handling of the fuel assemblies. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

Upon each completion of core loading and installation of the reactor vessel head, specific mechanical and electrical tests will be performed prior to initial criticality.

The fuel handling accident has been analyzed based on the activity that could be released from fuel rod gaps of 204 rods of the highest power assembly\* with a 100 hour decay period following power operation at 2550 Mwt for 23,000 hours. The requirements detailed in Specification 3.10 provide assurance that refueling unit conditions conform to the operating conditions assumed in the accident analysis.

Detailed procedures and checks insure that fuel assemblies are loaded in the proper locations in the core. As an additional check, the moveable incore detector system will be used to verify proper power distribution. This system is capable of revealing any assembly enrichment error or loading error which could cause power shapes to be peaked in excess of design value.

\* Fuel rod gap activity from 204 rods of the highest power 15x15 assembly is greater than fuel rod gap activity from 264 rods of the highest power 17x17 demonstration assembly.

References

FSAR Section 5.2	Containment Isolation
FSAR Section 6.3	Consequence Limiting Safeguards
FSAR Section 9.12	Fuel Handling System
FSAR Section 11.3	Radiation Protection
FSAR Section 13.3	Table 13.3-1
FSAR Section 14.4.1	Fuel Handling Accidents
FSAR Supplement: Volume I: Question 3.2	



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. DPR-32  
AND AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. DPR-37  
VIRGINIA ELECTRIC AND POWER COMPANY  
SURRY POWER STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-280 AND 50-281

INTRODUCTION

By letter dated November 14, 1980, Virginia Electric and Power Company (the licensee) requested amendments to License Nos. DPR-32 and DPR-37 for the Surry Power Station, Unit Nos. 1 and 2. The proposed changes would assure that redundancy in decay heat removal capability will be maintained, and would provide a minimum water level over fuel assemblies during refueling operations.

The TMI Lessons Learned Technical Specifications proposed in the November 14, 1980 letter will be issued by a separate amendment.

DISCUSSION AND EVALUATION

NRC letter dated June 11, 1980, requested that all PWR licensee's amend their Technical Specifications with respect to reactor decay heat removal capability. The basis for this request was founded in a number of events that have occurred at operating PWR facilities where decay heat removal capability has been seriously degraded due to inadequate administrative controls utilized when the plants were in shutdown modes of operation. IE Bulletin 80-12 requested the licensee to immediately implement administrative controls which would ensure that proper means are available to provide redundant methods of decay heat removal. The proposed Technical Specifications are to provide long term assurance that redundancy will be maintained.

We have reviewed the licensee's proposed Technical Specifications and find that adequate redundancy has been provided for removing decay heat during all modes of operation. We, therefore, conclude that the Technical Specifications related to decay heat removal are acceptable.

By letter of August 15, 1980 we advised the licensee of changes that had been made in Westinghouse Standard Technical Specifications. These changes require at least 23 feet of water over the top of the reactor pressure vessel flange during movement of fuel assemblies or control rods. This requirement assures that fuel assemblies can be transferred out of the reactor pressure vessel with sufficient water coverage to prevent exposure of fuel handlers.

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The current Technical Specifications have no requirements on minimum water level. Consequently, the licensee was requested to make the necessary review and modifications to assure that exposure of fuel assemblies cannot occur. In the response of November 14, 1980, the licensee revised the Technical Specifications to provide the 23 feet of minimum water level above the reactor pressure vessel flange during movement of fuel assemblies and to provide residual heat removal capability when the level falls below 23 feet.

We have reviewed the Technical Specifications related to minimum water level and conclude that they are acceptable.

#### ENVIRONMENTAL CONSIDERATION

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:

MAY 12 1981

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-280 AND 50-281VIRGINIA ELECTRIC AND POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY  
OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 67 to Facility Operating License No. DPR-32 and Amendment No. 67 to Facility Operating License No. DPR-37 issued to Virginia Electric and Power Company (the licensee), which revised Technical Specifications for operation of the Surry Power Station, Unit Nos. 1 and 2, respectively, (the facilities), located in Surry County, Virginia. The amendments are effective as of the date of issuance.

These amendments revise the Technical Specifications to ensure redundancy in decay heat removal capability in all modes of operation and to provide a minimum water level above fuel assemblies during refueling operations.

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 these amendments do not involve a significant hazards consideration.

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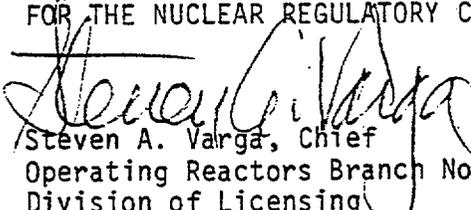
- 2 -

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 these amendments.

For further details with respect to this action, see (1) the application for amendments dated November 14, 1980, (2) Amendment Nos. 67 and 67 to License Nos. DPR-32 and DPR-37, 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 Swem Library, College of William and Mary, Williamsburg, Virginia 23185. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 12th day of May 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing