

April 22, 1986

Posted
Amndt. 106
to DPR-37

Docket Nos. 50-280
and 50-281

DISTRIBUTION

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Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 106 to Facility Operating License No. DPR-32 and Amendment No. 106 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 October 28, 1985, as supplemented April 1, 1986.

These amendments increase the maximum allowable K-effective during refueling conditions from the current value of 0.90 to 0.95, and reduces the frequency of sampling for boron concentration from once every 8 hours, to once every 72 hours.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly Federal Register notice.

Sincerely,

/s/

Chandu P. Patel, Project Manager
PWR Project Directorate #2
Division of PWR Licensing-A

Enclosures:

1. Amendment No. 106 to DPR-32
2. Amendment No. 106 to DPR-37
3. Safety Evaluation

cc: w/enclosures
See next page

LA: PAD#2
D Miller
4/17/86

CPP
PM: PAD#2
C Patel
4/8/86

f.h.c.
PM: PAD#2
T Chan: hc
4/9/86

SR
O: PAD#2
LRubenstein
4/10/86

OELD
Johnson
4/18/86
w/ had changes in 2nd part

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Surry Power Station

cc:

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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. 106
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 October 28, 1985, as supplemented April 1, 1986, 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-32 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 106, 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



Lester S. Rubenstein, Director
PWR Project Directorate #2
Division of PWR Licensing-A

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 22, 1986



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. 106
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 October 28, 1985, as supplemented April 1, 1986, 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 Appendix A, as revised through Amendment No. 106, 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



Lester S. Rubenstein, Director
PWR Project Directorate #2
Division of PWR Licensing-A

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 22, 1986

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 106 FACILITY OPERATING LICENSE NO. DPR-32

AMENDMENT NO. 106 FACILITY OPERATING LICENSE NO. DPR-37

DOCKET NOS. 50-280 AND 50-281

Revise Appendix A as follows:

Remove Pages

TS 1.0-1
3.8-1
3.8-3
3.10-3
3.10-5

Insert Pages

TS 1.0-1
3.8-1
3.8-3
3.10-3
3.10-5

1.0 DEFINITIONS

The following frequently used terms are defined for the uniform interpretation of the specifications.

A. Rated Power

A steady state reactor core heat output of 2441 MWt.

B. Thermal Power

The total core heat transferred from the fuel to the coolant.

C. Reactor Operation

1. Refueling Shutdown Condition

When the reactor is subcritical by at least 5% $\Delta k/k$ and T_{avg} is $\leq 140^\circ\text{F}$ and fuel is scheduled to be moved to or from the reactor core.

2. Cold Shutdown Condition

When the reactor is subcritical by at least 1% $\Delta k/k$ and T_{avg} is $\leq 200^\circ\text{F}$.

3. Intermediate Shutdown Condition

When the reactor is subcritical by an amount greater than or equal to 1.77% $\Delta k/k$ and $200^\circ\text{F} < T_{avg} < 547^\circ\text{F}$.

3.8 CONTAINMENT

Applicability

Applies to the integrity and operating pressure of the reactor containment.

Objective

To define the limiting operating status of the reactor containment for unit operation.

Specification

A. Containment Integrity and Operating Pressure

1. The containment integrity, as defined in TS Section 1.0, shall not be violated unless the reactor is in the cold shutdown condition.
2. The reactor containment shall not be purged whenever the Reactor Coolant System temperature is above 200°F.
3. The inside and outside isolation valves in the steam jet air ejector suction line shall be locked, sealed or otherwise secured closed whenever the Reactor Coolant System temperature is above 200°F.
4. The Reactor Coolant System temperature and pressure must not exceed 350°F and 450 psig, respectively, unless the air partial pressure in the containment is at a value equal to, or below, that specified in TS Figure 3.8-1.
5. The containment integrity shall not be violated when the reactor vessel head is unbolted unless a shutdown margin greater than 5 percent $\Delta k/k$ is maintained.

The shutdown margins are selected based on the type of activities that are being carried out. The 5 percent $\Delta k/k$ shutdown margin during refueling precludes criticality under any circumstances, even though fuel and control rod assemblies are being moved.

The allowable value for the containment air partial pressure is presented in TS Figure 3.8-1 for service water temperatures from 25 to 90°F. The allowable value varies as shown in TS Figure 3.8-1 for a given containment average temperature. The TWST water shall have a maximum temperature of 45°F.

The horizontal limit lines in TS Figure 3.8-1 are based on LOCA peak calculated pressure criteria, and the sloped line is based on LOCA sub-atmospheric peak pressure criteria.

The curve shall be interpreted as follows:

The horizontal limit line designates the allowable air partial pressure value for the given average containment temperature. The horizontal limit line applies for service water temperatures from 25°F to the sloped line intersection value (maximum service water temperature).

From TS Figure 3.8-1, if the containment average temperature is 112°F and the service water temperature is less than or equal to 83°F, the allowable air partial pressure value shall be less than or equal to 9.65 psia. If the average containment temperature is 116°F and the service water temperature is less than or equal to 88°F, the allowable air partial pressure value shall be \pm 9.35 psia. These horizontal limit lines are a result of the higher allowable initial containment average temperatures and the analysis of the pump suction break.

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. With the reactor vessel head unbolted or removed, any filled portions of the Reactor Coolant System and the refueling canal shall be maintained at a boron concentration which is:
 - a. Sufficient to maintain K-effective equal to 0.95 or less, and
 - b. Greater than or equal to 2000 ppm and shall be checked by sampling at least once every 72 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.

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.

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, established by Specification 3.10.A.9, is sufficient to maintain the reactor subcritical by at least 5% $\Delta k/k$ in the cold shutdown condition with all control rod assemblies inserted. This includes a 1% $\Delta k/k$ and a 50 ppm boron concentration allowance for uncertainty. This concentration is also sufficient to maintain the core subcritical with no control rod assemblies inserted into the reactor. Checks are performed during the reload design and safety analysis process to ensure that K-effective is equal to or less than 0.95 for each core. Periodic checks of refueling water boron concentration assure the proper shutdown margin. Specification 3.10.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.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 106 TO FACILITY OPERATING LICENSE NO. DPR-32
AND AMENDMENT NO. 106 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 October 28, 1985, as supplemented April 1, 1986, Virginia Electric and Power Company (VEPCO) requested an increase in the maximum K-effective allowable during refueling conditions from the current value of 0.90 to 0.95 for Surry Units 1 and 2. The proposed change, which is consistent with the limit specified in the Westinghouse Standard Technical Specification, will provide greater flexibility during the reload design process while maintaining the required safety margin. The current technical specification is restrictive from a core reload design standpoint because it requires increased burnable poison for the increasingly reactive core design used for longer fuel cycles. The licensee also requested that the sampling frequency during the refueling mode be reduced from 8 hours to 72 hours.

Discussion and Evaluation

The present Surry Technical Specification requires a minimum boron concentration of 2000 ppm and a K-effective less than 0.90 when the reactor vessel head is unbolted. These requirements are in Section 3.8.A and 3.10.A. Section 3.10.A also specifies the frequency at which the boron concentration is checked as 8 hours. The bases to Section 3.10.A indicates that the core will be subcritical by approximately 1% with no control rod assemblies inserted into the reactor.

The proposed Technical Specifications which are consistent with the Westinghouse Standard Technical Specifications, ensure that the reactor remains subcritical during refueling. The current Surry Updated Final Safety Analysis Report (UFSAR) accident analyses were reviewed. Only the boron dilution and the refueling accidents are potentially affected by the proposed changes.

For the boron dilution accident the UFSAR calculated time to criticality remains bounding since the initial boron concentration (>2000 ppm) remains unchanged. Thus, the safety margin is not reduced.

For the fuel handling accident a K-effective equal to 0.95 will continue to maintain the core subcritical and the results of the UFSAR remain bounding.

The basis to Technical Specification 3.10.A9 states that the required refueling concentration of 2000 ppm is sufficient to maintain the reactor approximately 1% subcritical with no control rod assemblies inserted into the core. This statement is being replaced by a general statement which states that the concentration is sufficient to maintain the core subcritical. This is consistent with the wording of General Design Criterion No. 26. Calculations to verify this condition are performed for every reload.

The final change is the frequency of boron sampling during refueling. Systems operable during refueling conditions were reviewed and no interaction requiring an 8 hour sampling frequency were found. The specification is considered to be an administrative control for surveillance. Therefore, VEPCO proposed to change the frequency to 72 hours which is consistent with the Standard Technical Specifications.

The April 1, 1986, submittal provides additional information which was inadvertently omitted from the October 28, 1985 submittal, and does not alter our initial determination of the original submittal.

As such, we conclude that the proposed technical specification changes as submitted by the licensee are acceptable.

Environmental Consideration

These amendments involve a change in the installation or use of the facilities components located within the restricted areas as defined in 10 CFR 20 and in surveillance requirement. The staff has determined that 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 that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR Sec 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) 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.

Dated: April 22, 1986

Principal Contributor:

M. Chatterton