

April 21, 1993

Docket Nos. 50-280
and 50-281

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See next page

Mr. W. L. Stewart
Senior Vice President - Nuclear
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, Virginia 23060

Dear Mr. Stewart:

SUBJECT: SURRY UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: INTERMEDIATE
RANGE HIGH FLUX REACTOR TRIP SETPOINT (TAC NOS. M85062 AND
M85063)

The Commission has issued the enclosed Amendment No. 176 to Facility
Operating License No. DPR-32 and Amendment No. 175 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 (TS) in response to your application transmitted by letter
dated October 26, 1992.

These amendments, which are in partial response to your application, increase
the limit for the intermediate range high flux reactor trip setpoint and
establish an allowed outage time for the source range nuclear instruments when
reactor power is below a specified level. The remaining request that would
eliminate any redundant stipulations that predicted critical rod position be
above the zero power insertion limit will be addressed at a future date.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will
be included in the Commission's biweekly Federal Register notice.

Sincerely,
(Original Signed By)
Bart C. Buckley, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 176 to DPR-32
2. Amendment No. 175 to DPR-37
3. Safety Evaluation

cc w/enclosures: See next page

OFC	:LA:PDII-2	:PM:PDII-2	:D:PDII-2	: OGC	:	:
NAME	:E. Tana	:B. Buckley	:H. Berkow	:	:	:
DATE	: 4/14/93	: 4/14/93	: 4/14/93	: 4/15/93	:	:

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Virginia Electric and Power Company

Surry Power Station

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DATED: April 21, 1993

AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-32 - SURRY UNIT 1
AMENDMENT NO. 175 TO FACILITY OPERATING LICENSE NO. DPR-37 - SURRY UNIT 2

Docket File
NRC & Local PDRs
PDII-2 Reading
S. Varga, 14/E/4
G. Lainas, 14/H/3
H. Berkow
E. Tana
B. Buckley
OGC
D. Hagan, 3302 MNBB
G. Hill (8), P-137
Wanda Jones, MNBB-7103
C. Grimes, 11/F/23
ACRS (10)
OPA
OC/LFMB
M. Sinkule, R-II



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. 176
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 26, 1992, 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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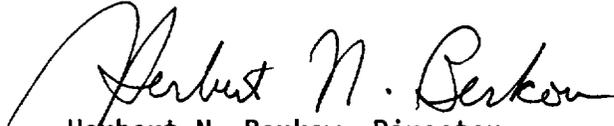
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-32 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 176, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 21, 1993



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. 175
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 26, 1992, 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.

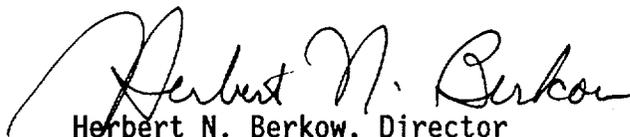
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-37 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 175, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 21, 1993

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-32

AMENDMENT NO. 175 TO FACILITY OPERATING LICENSE NO. DPR-37

DOCKET NOS. 50-280 AND 50-281

Revise Appendix A as follows:

Remove Pages

2.3-1
2.3-4
2.3-5
3.7-13b

Insert Pages

2.3-1
2.3-4
2.3-5
3.7-13b

2.3 LIMITING SAFETY SYSTEM SETTINGS, PROTECTIVE INSTRUMENTATION

Applicability

Applies to trip and permissive settings for instruments monitoring reactor power; and reactor coolant pressure, temperature, and flow; and pressurizer level.

Objective

To provide for automatic protective action in the event that the principal process variables approach a safety limit.

Specification

A. Protective instrumentation settings for reactor trip shall be as follows:

1. Startup Protection

- (a) High flux, power range (low set point) - $\leq 25\%$ of rated power.
- (b) High flux, intermediate range (high set point) - current equivalent to $\leq 40\%$ of full power.
- (c) High flux, source range (high set point) - Neutron flux $\leq 10^6$ counts/sec.

2. Core Protection

- (a) High flux, power range (high set point) - $\leq 109\%$ of rated power.

- B. Protective instrumentation settings for reactor trip interlocks shall be as follows:
1. The reactor trip on low pressurizer pressure, high pressurizer level, turbine trip, and low reactor coolant flow for two or more loops shall be unblocked when power $\geq 10\%$ of rated power.
 2. The single loop loss of flow reactor trip shall be unblocked when the power range nuclear flux $\geq 50\%$ of rated power. During two loop operation with the loop stop valves in the inactive loop open, this blocking setpoint, established by Permissive 8, may be increased to 60% of rated power only after the overtemperature ΔT setpoint is adjusted to the mandatory two loop value. For two loop operation with the loop stop valves of the inactive loop closed, Permissive 8 may be increased to 65% of rated power only after the overtemperature ΔT setpoint is adjusted to the mandatory value for this condition.
 3. The power range high flux, low setpoint trip and the intermediate range high flux, high setpoint trip shall be unblocked when power $\leq 10\%$ of rated power.
 4. The source range high flux, high setpoint trip shall be unblocked when the intermediate range nuclear flux is $\leq 5 \times 10^{-11}$ amperes.

Basis

The power range reactor trip low setpoint provides protection in the power range for a power excursion beginning from low power. This trip value was used in the safety analysis.⁽¹⁾ The Source Range High Flux Trip provides reactor core protection during shutdown (COLD SHUTDOWN, INTERMEDIATE SHUTDOWN, and HOT SHUTDOWN) when the reactor trip breakers are closed and reactor power is below the permissive P-6. The Source and Intermediate Range trips in addition to the Power Range trips provide core protection during

reactor startup when the reactor is critical. The Source Range channels will initiate a reactor trip at about 10^6 counts per second unless manually blocked when P-6 becomes active. The Intermediate Range channels will initiate a reactor trip at a current level proportional to $\leq 40\%$ of RATED POWER unless manually blocked when P-10 becomes active. In the accident analyses, bounding transient analysis results are based on reactivity excursions from an initially critical condition, where the Source Range trip is assumed to be blocked. Accidents initiated from a subcritical condition would produce less severe results, since the Source Range trip would provide core protection at a lower power level. No credit is taken for operation of the Intermediate Range High Flux trip. However, its functional capability is required by this specification to enhance the overall reliability of the Reactor Protection System.

The high and low pressurizer pressure reactor trips limit the pressure range in which reactor operation is permitted. The high pressurizer pressure reactor trip is also a backup to the pressurizer code safety valves for overpressure protection, and is therefore set lower than the set pressure for these valves (2485 psig). The low pressurizer pressure reactor trip also trips the reactor in the unlikely event of a loss-of-coolant accident.⁽³⁾

The overtemperature ΔT reactor trip provides core protection against DNB for all combinations of pressure, power, coolant temperature, and axial power distribution, provided only that the transient is slow with respect to piping transit delays from the core to the temperature detectors (about 3 seconds), and pressure is within the range between high and low pressure reactor trips. With normal axial power distribution, the reactor trip limit, with allowance for errors,⁽²⁾ is always below the core safety limit as shown on TS Figure 2.1-1. If axial peaks are greater than design, as indicated by the difference between top and bottom power range nuclear detectors, the reactor limit is automatically reduced.⁽⁴⁾⁽⁵⁾

The overpower and overtemperature protection system setpoints have been revised to include effects of fuel densification on core safety limits and to apply to 100% of design flow. The revised setpoints in the Technical Specifications will ensure that the combination of power, temperature, and pressure will not exceed the revised

TABLE 3.7-1 (Continued)

- ACTION 4.** With the number of channels **OPERABLE** one less than required by the **Minimum OPERABLE Channels** requirement and with the **THERMAL POWER** level:
- a. Below P-6, (**Block of Source Range Reactor Trip**) setpoint, restore the inoperable channel to **OPERABLE** status within 48 hours or open the reactor trip breakers within the next hour. Two **Source Range** channels must be **OPERABLE** prior to increasing **THERMAL POWER** above the P-6 setpoint.
 - b. Above P-6, operation may continue.
- ACTION 5.** With the number of channels **OPERABLE** one less than required by the **Minimum OPERABLE Channels** requirement, verify compliance with the **SHUTDOWN MARGIN** requirements within 1 hour and at least once per 12 hours thereafter.
- ACTION 6.A.** With the number of **OPERABLE Channels** equal to the **Minimum Operable Channels** requirement, **REACTOR CRITICAL** and **POWER OPERATION** may proceed provided the following conditions are satisfied:
1. The inoperable channel is placed in the tripped condition within 6 hours.
 2. The **Minimum OPERABLE Channels** requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per **Specification 4.1**.
- 6.B.** With the number of **OPERABLE Channels** one less than required by the **Minimum Operable Channels** requirement, be in **Hot Shutdown** within 6 hours.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-32
AND AMENDMENT NO. 175 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

1.0 BACKGROUND

By letter dated October 26, 1992, the Virginia Electric and Power Company, (the licensee), submitted a request for changes to Surry Units 1 and 2 Technical Specifications (TS). The requested changes would (1) revise the TS Intermediate Range (IR) high flux trip setpoint, (2) eliminate any redundant stipulations that predicted critical rod position be above the zero power insertion limit, and (3) change Table 3.7-1, Operator Action 4, to confirm the availability of the Source Range channel, thus ensuring that startup protection is indeed provided by the Source Range channel. In partial response to the licensee's request, only proposed changes (1) and (3) are addressed in this safety evaluation. Change (2) will be addressed in a future amendment pending receipt of additional clarification from the licensee.

2.0 EVALUATION

2.1 Increased Intermediate Range Trip Setpoint (TS 2.3.A.1.b)

The Intermediate Range High Flux Power Trip provides backup protection to the Power Range High Flux trip (low set point) during reactor startup. The IR circuitry provides monitoring of the flux level over an eight decade range. A reactor trip is generated based on one out of two channels exceeding a current equivalent of 25 percent rated thermal power. The channels can be manually bypassed when permissive P-10 (2 of 4 power range channels > 10 percent of rated thermal power) is active. Also, the Surry Updated Final Safety Analysis Report (UFSAR) accident analyses do not take credit for this protection. The UFSAR assumes that the reactor trip is provided by either the Source Range or the Power Range High Flux level trips.

The revision of the IR high flux trip setpoint from ≤ 25 percent to ≤ 40 percent power was evaluated by determining the maximum attainable IR trip setpoint, and then evaluating that value for the various startup accidents that could require a backup trip for the Power Range High Flux trip (low setpoint). The IR High Flux trip setpoint will be set nominally at the current equivalent of ≤ 35 percent of rated power.

The licensee evaluated the total channel error for the IR Range High Flux trip by including a statistical combination of the instrumentation and random process measurement uncertainties. Uncertainties from arithmetic combinations of nonrandom process measurements, control rod insertion effects and the reactor vessel downcomer temperature effects, were treated as biases. The within-cycle power redistribution effects are accounted for by periodic adjustment of the actual plant IR trip setpoint equivalent current.

TS Amendment No. 117 brought the Surry TS in closer agreement with NUREG-0452, "Standard Technical Specification for Westinghouse Pressurized Water Reactors," Revision 4. With the technical requirements as specified in this amendment, there is no operating condition in which the IR High Flux level trip provides the sole overpower protection. Consequently, the IR High Flux level trip is needed only to provide backup trip protection, since it is not necessary to assume that this trip function initiates a reactor trip for the UFSAR safety analyses. The staff agrees with this change.

2.2 Change to TS Table 3.7-1, Operator action 4.

The revision to Operator Action 4 of TS Table 3.7-1 provides an allowed outage time for conditions below a power level of P-6 with one IR channel inoperable. This revision establishes an allowed outage time for the Source Range Channel when the power level is below P-6. The revised technical specification, action 4, when combined with the other Source Range requirements for power above P-6 in Table 3.7-1, yields the same requirements as those for Operator Action 13 in NUREG-0452, Revision 4. The current Surry TS do not limit the duration for which one source range channel can be inoperable at a thermal power level below P-6. Thus, this will provide startup protection by providing confirmation of the availability of the source range channel. The staff agrees with this change.

3.0 SUMMARY

The staff has reviewed the licensee's proposed TS changes to the Intermediate Range High Flux trip setpoint, and the change to Table 3.7-1. Based on this review, we conclude that the proposed changes satisfy staff positions and requirements in these areas. Operation subject to these TS changes is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Virginia State official was notified of the proposed issuance of the amendments. The State official had no comment.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no

significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding (57 FR 61122). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. Attard

Date: April 21, 1993