

February 2, 1990

Docket Nos. 50-338
and 50-339

DISTRIBUTION
See attached sheet

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

Dear Mr. Cartwright:

SUBJECT: NORTH ANNA UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: ENGINEERED
SAFETY FEATURES (ESF) SLAVE RELAYS (TAC NOS. 73236 AND 73237)

The Commission has issued the enclosed Amendment Nos. 125 and 109 to Facility
Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station,
Units No. 1 and No. 2 (NA-1&2). The amendments revise the Technical Speci-
fications (TS) in response to your letter dated July 12, 1989.

The amendments revise the TS definition of the ESF slave relay test. Your
request to revise the TS to allow quarterly testing of the ESF slave relays was
granted in Amendment Nos. 123 and 107 dated September 7, 1989.

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

Leon B. Engle, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 125 to NPF-4
- 2. Amendment No. 109 to NPF-7
- 3. Safety Evaluation

cc w/enclosures:
See next page

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NAME	:DWA	:LEng	:HBER	:R Bachmann	:	:	:
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Document Name: AMEND NA TACS 73236/73237

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Mr. W. L. Stewart
Virginia Electric & Power Company

North Anna Power Station
Units 1 and 2

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DATED: February 2, 1990

AMENDMENT NO. 125 TO FACILITY OPERATING LICENSE NO. NPF-4-NORTH ANNA UNIT 1
AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. NPF-7-NORTH ANNA UNIT 2

[REDACTED]
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Wanda Jones, P-130A
J. Calvo, 11/F/23
ACRS (10)
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cc: Plant Service list



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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 125
License No. NPF-4

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated July 12, 1989, 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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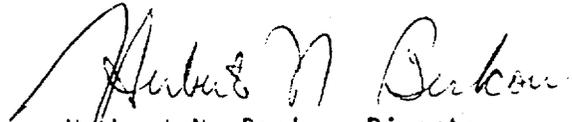
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.D.(2) of Facility Operating License No. NPF-4 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 125, 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 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: February 2, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 125

TO FACILITY OPERATING LICENSE NO. NPF-4

DOCKET NO. 50-338

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

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1.0 DEFINITIONS (Continued)

QUADRANT POWER TILT RATIO

1.23 QUADRANT POWER TILT RATIO shall be the ratio of the maximum upper ex-core detector calibrated output to the average of the upper ex-core detector calibrated outputs, or the ratio of the maximum lower ex-core detector calibrated output to the average of the lower ex-core detector calibrated outputs, whichever is greater. With one ex-core detector inoperable, the remaining three detectors shall be used for computing the average.

RATED THERMAL POWER

1.24 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 2893 Mwt.

REACTOR TRIP SYSTEM RESPONSE TIME

1.25 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until loss of stationary gripper coil voltage.

REPORTABLE EVENT

1.26 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

SHUTDOWN MARGIN

1.27 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

SITE BOUNDARY

1.28 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased or otherwise controlled by the licensee.

SLAVE RELAY TEST

1.29 A SLAVE RELAY TEST shall be the energization of each slave relay and verification of OPERABILITY of each relay. The SLAVE RELAY TEST shall include a continuity check, as a minimum, of associated testable actuation devices.

SOLIDIFICATION

1.30 SOLIDIFICATION shall be the conversion of wet wastes into a solid form that meets shipping and burial ground requirements.

SOURCE CHECK

1.31 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to radiation. This applies to installed radiation monitoring systems.

1.0 DEFINITIONS (Continued)

STAGGERED TEST BASIS

1.32 A STAGGERED TEST BASIS shall consist of:

- a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals,
- b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

THERMAL POWER

1.33 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

UNIDENTIFIED LEAKAGE

1.34 UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE or CONTROLLED LEAKAGE.

UNRESTRICTED AREA

1.35 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY where access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.

VENTILATION EXHAUST TREATMENT SYSTEM

1.36 A VENTILATION EXHAUST TREATMENT SYSTEM is the system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment (such a system is not considered to have any effect on noble gas effluents). Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

VENTING

1.37 VENTING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required during VENTING. Vent, used in system names, does not imply a VENTING process.



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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 109
License No. NPF-7

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric and Power Company, et al., (the licensee) dated July 12, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

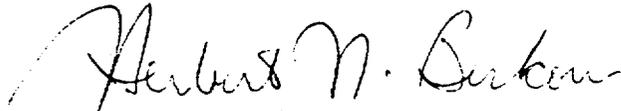
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-7 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 109, 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 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 - 1/11
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 2, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 109

TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 125 AND 109 TO

FACILITY OPERATING LICENSE NOS. NPF-4 AND NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

NORTH ANNA POWER STATION, UNITS NO. 1 AND NO. 2

DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

On October 19, 1988, the NRC issued Information Notice No. 88-83, "Inadequate Testing of Relay Contacts in Safety-Related Logic Systems." This information notice described an NRC inspection at the Duane Arnold Energy Center that discovered apparent deficiencies with the logic system functional test procedures for the reactor core isolation cooling and high pressure coolant injection systems.

After a review of the information notice, the Virginia Electric and Power Company (the licensee) of the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2) determined that the NA-1&2 Technical Specifications (TS) are not explicit when describing the extent of the functional testing required during reactor operation. They consequently submitted licensee event report (LER) 88-027 on December 15, 1988 to document the difference between the TS interpretation and the NA-1&2 Updated Final Safety Analysis Report (UFSAR).

By letter dated May 8, 1989, the licensee proposed the removal, from the NA-1&2 UFSAR, of on-line testing of safety system slave relays. In that letter the licensee proposed changing the UFSAR to reflect their interpretation of the TS requirements for testing which would require only master relay activation coupled with a slave relay continuity test. The slave relay coil is not energized and the slave relay contacts are not exercised with that interpretation. NA-1&2 has not performed on-line slave relay testing as described in the UFSAR since initial startup in 1978 (NA-1) and 1980 (NA-2).

In the May 8, 1989 letter and in a June 5 1989 meeting, the licensee described the testing which has been done, technical difficulties with certain aspects of the tests and the possible risks associated with a failure of the testing equipment. The licensee's proposal to remove the testing description from the UFSAR was not acceptable and the staff reiterated that the information notice accurately described the NRC position that the logic system functional test should be a test of all relays and contacts and that any exceptions should be justified on a case-by-case basis.

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On June 9, 1989, a conference call was held between NRC Region II, NRR, the NA-1&2 NRC Senior Resident Inspector and licensee staff to discuss engineered safety features (ESF) slave relay on-line testing. Based on the meeting and conference call, the licensee agreed to revise their interpretation of the testing requirements to be consistent with NUREG-0452, Rev. 4, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors." By letter dated June 9, 1989, the licensee requested discretionary enforcement for the monthly ESF slave relay testing to allow them time to develop the necessary testing procedures and determine any relays that cannot be tested on-line without excessive risk and provide justification. The NRC Region II granted the discretionary enforcement.

By letter dated July 12, 1989, the licensee submitted their ESF slave relay test plan, basis for off-line testing, changes to TS and safety analysis. By Amendment Nos. 123 and 107 dated September 7, 1989, the NRC issued TS changes which accepted one aspect of the licensee's July 12, 1989 letter in that the quarterly testing of slave relays (instead of monthly) was consistent with Standard Technical Specifications and was therefore acceptable. This Safety Evaluation addresses the remaining technical aspects of the July 12, 1989 submittal.

2.0 DISCUSSION AND EVALUATION

In Attachment 1 to the July 12, 1989 letter, the licensee listed the 28 ESF slave relays (per unit), the frequency of testing and the criteria for on/off line testing. Twenty-two relays will be tested only during refueling while the remaining six will be tested quarterly and during refueling. The testing during refueling requirement existed previously. This requirement is part of the system functional testing and will remain unchanged. Three criteria are provided by the licensee for justifying off-line only testing.

1. A single failure in the Safeguards Test Cabinet circuitry would cause an inadvertent RPS or ESF actuation.
2. The test will adversely affect two or more components in one ESF system or two or more ESF systems.
3. The test will create a transient (reactivity, thermal or hydraulic) condition on the RCS.

Attachment 2 of the July 12, 1989 letter provided a relay-by-relay basis for off-line testing. It described the design function, equipment actuated, operational impact and safety significance of testing.

Several of the descriptions of the safety significance of testing state that there is no safety significance if the test circuit performs properly. The described impact on safety assumes a worst case scenario of the safeguards test cabinet, a failure of the blocking circuit to actually block actuation of the final equipment.

After review of the attachments, the staff concludes that the relay and subsequent testing evaluations appear to be complete and that the assignment of the slave relays to the three criteria is adequately justified.

Attachment 3 provided an analysis of the test equipment, safeguards testing cabinet, and failure of the blocking circuit. This test equipment provides two basic types of tests, "Go" and "Block". The "Go" circuits actuate the ESF equipment while the "Block" circuits prevent actuation of the ESF equipment with circuit integrity verified by electrical continuity testing. The attachment provides details of the blocking schemes and possible failure modes.

Attachment 4 is the proposed changes to the TS. The proposed change states that only slave relays which do not satisfy the three criteria will be functionally tested on-line.

Attachment 5 provided the licensee's safety analysis for the proposed TS changes. In this analysis the licensee notes that since construction, modifications have been made which added equipment that would be actuated during testing, and therefore an adequate design for testing all of the slave relays on-line does not exist. In addition to inadequate testing design, the licensee does not have a high confidence level in the reliability of their test equipment.

The analysis confirms that the testing will still include coil continuity tests of the slave relays on a quarterly basis and full testing at refueling. To date, there has not been a failure of a slave relay to perform its safety function at NA-1&2. To determine a potential failure rate, the licensee used overall failure rates for slave and auxiliary relays at NA-1&2 and divided them by the number of ESF slave relays only. The staff agrees with the licensee's conclusion that this appears to be a conservative estimate of ESF slave relay failure rates.

The licensee concluded that (1) the probability of inadvertent RPS or ESF actuation, (2) the length of time to perform the test which disables one channel, and (3) performing tests with test equipment which may be unreliable and abnormal operation modes, present a greater risk to overall plant safety than not testing ESF slave relays on-line. The reliability of the ESF slave relays has been shown to remain high. The staff agrees with the licensee's conclusion.

3.0 SUMMARY

The staff has concluded that, based on the reasons described above, the TS changes which allow certain ESF slave relays to be exempt from quarterly testing are acceptable. Also, the revised TS definition of the ESF slave relay test is acceptable. Finally, the licensee should continue to improve the test equipment and consider design modifications which would allow complete testing of all ESF slave relay coils and contacts without undue risk to plant safety.

4.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change to a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have 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. 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.

5.0 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 the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 2, 1990

Principal Contributor:
J. Stewart