DCS MS-016

APR 16 1984

Docket Nos. 50-338
and 50-339

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Mr. W. L. Stewart
Vice President - Nuclear Operations
Virginia Electric and Power Company
Post Office Box 26666
Richmond, Virginia 23261

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment Nos. 56 and 38 to Facility Operating License No. NPF-4 and No. NPF-7 for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The amendments revise the Technical Specifications (TS) in response to your letter dated December 21, 1983 as supplemented February 21, 1984 and in our discussions with you regarding this matter. The amendments are effective as of the date of issuance.

The amendments revise the NA-1&2 TS surveillance requirement 4.7.1.2a to state that the turbine overspeed protection system shall be demonstrated as operable once per 31 days instead of once per seven days. The revised surveillance requirement is based on past demonstrated reliability and performance of the turbine overspeed protection system and a viable ongoing maintenance inspection, and turbine valve test program coupled with an inplace inspection program for the low pressure turbine discs.

A copy of the Safety Evaluation is enclosed. The notice of issuance will be included in the Commission's next monthly Federal Register notice.

Sincerely,

Original signed by

Leon B. Engle, Project Manager
Operating Reactors Branch #3
Division of Licensing

Enclosure:
1. Amendment No. 56 to NPF-4
2. Amendment No. 38 to NPF-7
3. Safety Evaluation

cc: See next page

ORB#3:DL	ORB#3:DL	ORB#3:DL	OELD	AD:OR:DL
PMKretuzer	LEngle/pn	JRMiller		GCLainas
3/21/84	3/27/84	3/ /84	3/ /84	3/ /84

No legal objection 4/13/84

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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. 56
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 (the licensee) dated December 21, 1983 as supplemented February 21, 1984, 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.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. 56, 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

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 16, 1984

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 56 TO FACILITY OPERATING LICENSE NO. NPF-4

DOCKET NO. 50-338

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

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PLANT SYSTEMS

TURBINE OVERSPEED

LIMITING CONDITION FOR OPERATION

3.7.1.7 At least one turbine overspeed protection system shall be OPERABLE.

APPLICABILITY: MODE 1, 2 and 3

ACTION: With the above required turbine overspeed protection system inoperable, within 6 hours either restore the system to OPERABLE status or isolate the turbine from the steam supply.

SURVEILLANCE REQUIREMENT

4.7.1.7.1 The provisions of Specification 4.0.4 are not applicable.

4.7.1.7.2 The above required turbine overspeed protection system shall be demonstrated OPERABLE:

a. At least once per 31 days by cycling each of the following valves through one complete cycle.

   1. 4 Turbine Throttle valves

   2. 4 Turbine Governor valves

   3. 4 Turbine Reheat Stop valves

   4. 4 Turbine Reheat Intercept valves

b. At least once per 31 days by direct observation of the movement of each of the above valves through one complete cycle.

c. At least once per 18 months, by performance of CHANNEL CALIBRATION on the turbine overspeed protection instruments.

d. At least once per 40 months, by disassembly of at least one of each of the above valves and performing a visual and surface inspection of all valve seats, disks and stems and verifying no unacceptable flaws or corrosion.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be > 70°F when the pressure of either coolant in the steam generator is > 200 psig.

APPLICABILITY: At all times.

ACTION:

With the requirements of the above specification not satisfied:

a. Reduce the steam generator pressure of the applicable side to ≤ 200 psig within 30 minutes, and

b. Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation prior to increasing its temperatures above 200°F.

SURVEILLANCE REQUIREMENTS

4.7.2.1 The pressure in each side of the steam generator shall be determined to be < 200 psig at least once per hour when the temperature of either the primary or secondary coolant is < 70°F.

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. 38
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 (the licensee) dated December 21, 1983 as supplemented February 21, 1984, 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. 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 as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 16, 1984

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 38 TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

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

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PLANT SYSTEMS

STEAM TURBINE ASSEMBLY

LIMITING CONDITION FOR OPERATION

3.7.1.6 The structural integrity of the steam turbine assembly shall be maintained.

APPLICABILITY: MODES 1 and 2

ACTION: With the structural integrity of the steam turbine assembly not conforming to the above requirement restore the structural integrity of the steam turbine prior to placing it in service.

SURVEILLANCE REQUIREMENTS

4.7.1.6 The structural integrity of the steam turbine assembly shall be demonstrated;

a. At least once per 40 months, during shutdown, by a visual and surface inspection of the steam turbine assembly at all accessible locations, and

b. At least once per 10 years, during shutdown, by disassembly of the turbine and performing a visual, surface and volumetric inspection of all normally inaccessible parts.

PLANT SYSTEMS

TURBINE OVERSPEED

LIMITING CONDITION FOR OPERATION

3.7.1.7 At least one turbine overspeed system shall be OPERABLE.

APPLICABILITY: MODE 1, 2 and 3

ACTION: With the above required turbine overspeed protection system inoperable, within 6 hours either restore the system to OPERABLE status or isolate the turbine from the steam supply.

SURVEILLANCE REQUIREMENT

4.7.1.7.1 The provisions of Specification 4.0.4 are not applicable.

4.7.1.7.2 The above required turbine overspeed protection system shall be demonstrated OPERABLE:

a. At least once per 31 days by cycling each of the following valves through one complete cycle.

   1. 4 Turbine Throttle valves

   2. 4 Turbine Governor valves

   3. 4 Turbine Reheat Stop valves

   4. 4 Turbine Reheat Intercept valves

b. At least once per 31 days by direct observation of the movement of each of the above valves through one complete cycle.

c. At least once per 18 months, by performance of CHANNEL CALIBRATION on the turbine overspeed protection instruments.

d. At least once per 40 months, by disassembly of at least one of each of the above valves and performing a visual and surface inspection of all valve seats, disks and stems and verifying no unacceptable flaws or corrosion.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 56 AND NO. 38 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

Introduction:

By letter dated December 21, 1983 as supplemented February 21, 1984, the Virginia Electric and Power Company (the licensee) requested a change to the Technical Specifications (TS) to Facility Operating Licenses NPF-4 and NPF-7 for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). Specifically, the requested changes would revise the NA-1&2 TS 4.7.1.2a to require testing of the turbine overspeed protection system on a once per 31 day interval instead of the presently required interval of once per seven days.

By letter dated February 21, 1984, the licensee, at the staff's request, provided additional information documenting that NA-1&2 uses all volatile chemical treatment and that the turbine and turbine overspeed protection system fall within the scope of Westinghouse generic recommendations for monthly turbine valve testing.

Our discussion and evaluation of the requested change is provided below.

Discussion:

The staff's current position which requires weekly testing of turbine valves as stated in Standard Review Plan Section 10.2 "Steam Turbines" was established after extensive discussions with major steam turbine manufacturers and is based largely on engineering judgement and the recommendations of these manufacturers.

Westinghouse, in meetings on March 23, 1983 and August 16, 1983 with the NRC staff, presented results of a generic study on the generation of turbine missiles on nuclear turbines conducted on behalf of some licensees and applicants. This study specifically included consideration of the testing requirements for the turbine overspeed protection valves on turbines with steam chest valve arrangement of the type installed at NA-1&2. Westinghouse stated that the results of this study show that on such machines, turbine valve operability and reliability will not be significantly affected by increasing the periodic valve testing interval from the presently specified weekly interval to a much longer interval. Westinghouse also concluded that reduced

turbine valve testing on this type of turbine has little or no effect on the probability of turbine missile generation. In Westinghouse's judgement, a lack in any number of significant valve failures, good operating experience, and a well planned turbine valve maintenance and inspection program provides reasonable assurance to allow an increase in the periodic test interval for turbines with valve arrangements as those installed at NA-1&2. Since the above mentioned meetings, Westinghouse has issued a formal recommendation to their customers who have turbines employing turbine valves with steam chest arrangements of the type installed at NA-1&2 to change from periodic weekly to monthly valve testing.

Up to now the test frequency of nuclear service turbine valves has been largely based on experience with turbine generators installed in fossil plants. The requirement to test and inspect nuclear turbine valves on a weekly basis was originally included in the Standard Technical Specifications (STS) based on fossil plant experience. The requirement included in the STS was to assure functional operability on demand in order to avert a potential turbine overspeed condition that could result in the generation of turbine missiles. The objective of the valve testing was to assure high valve operability and reliability in order to minimize the probability of generating destructive missiles that could damage safety related equipment and thereby prevent safe shutdown of the plant. The turbine control and overspeed protection system is designed to control turbine action under all normal and abnormal conditions to assure that a turbine trip from full load will not cause the turbine to overspeed beyond acceptable limits, and thus minimize the probability of generating turbine missiles. Although the turbine control and overspeed protection system is not relied on to perform a safety function, it controls a plant process that has potential for impacting plant safety.

Nuclear turbine valves have proven to be extremely reliable in service as evidenced by the lack of failures over the many years of nuclear plant operation. The testing of these valves on a weekly basis has been in effect for 4 years and 3 years, respectively at NA-1&2. Through these years of weekly testing, the turbine valves have demonstrated 100 percent reliable valve freedom and operability. This proven reliability can also be attributed to the all volatile chemical treatment of feedwater which minimizes steam generator carry over and essentially eliminates valve failure due to scale buildup on the valve moving parts.

In the past, there has been a lack of a satisfactory statistical data base to determine frequency of turbine valve testing. Up to now test frequency of these valves has been largely based on experience with turbine generators installed in fossil plants. The results of the Westinghouse generic turbine missile study now shows that reduced turbine valve testing frequency on nuclear turbines of the type installed at NA-1&2 has a minimal effect on valve operability, reliability and probability of turbine missile generation.

The licensee's ongoing maintenance, inspection, and turbine valve test program described in the NA-1&2 Final Safety Analysis Report coupled with installed turbine generator protective features, an inplace inspection program

of the low pressure turbine discs, and the proposed revision to the Technical Specifications surveillance requirement 4.7.1.2a (which is consistent with the Westinghouse recommendations) provides reasonable assurance of a low design overspeed missile generation probability. This program performed on a periodic basis coupled with monthly testing of all turbine valves is satisfactory to the NRC staff.

Testing of turbine control valves on Westinghouse base loaded machines with steam chest arrangements necessitates reduction in generator output for a period of several hours. The valve testing sequences during turbine operation requires placing the turbine on manual control and repositioning all turbine control valves in the steam chest to permit individual full valve stroking. All valves are aligned to equal position. Repositioning of the control valves on a base loaded machine results in reduced steam flow to the turbine with a consequent reduction in generator output of about 5 percent. Testing of all turbine control valves is accomplished in a relatively short time (about 35 to 40 minutes). The bulk of the time consumed (approximately 2 1/2 to 3 hours) is in slowly lowering reactor output to correspond with the reduced turbine generator output to permit control valve testing. On completion of valve tests a similar time period is consumed in slowly increasing reactor power to permit full load operation of the turbine generator. The lowering and increasing of reactor output must be accomplished slowly to minimize xenon spiking. The potential for xenon spiking exists when subjecting the nuclear steam supply system to cyclical power transients and this was factored in the staff's consideration.

Evaluation:

Based on all of the above, the staff concludes that a monthly test interval instead of the presently specified weekly interval is acceptable for NA-1&2. Therefore, the NA-1&2 TS 4.7.1.2a is hereby revised to state that turbine overspeed protection system shall be tested once per 31 days.

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

Date: April 16, 1984

Principal Contributors:
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