APR 1 1978

Docket No. 50-338

Virginia Electric & Power Company
ATTN: Mr. W. L. Proffitt
Senior Vice President - Power
P. O. Box 26666
Richmond, Virginia 23261

Gentlemen:

SUBJECT: ISSUANCE OF AMENDMENT NO. 3 TO FACILITY OPERATING LICENSE NO. NPF-4 - NORTH ANNA POWER STATION, UNIT NO. 1

The Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 3 to Facility Operating License NPF-4 including page changes to Technical Specifications Appendices A and B.

The page changes for Appendix A incorporate conditions for operation and surveillance requirements for existing fire protection systems and administrative controls. These fire protection Technical Specifications shall become effective 30 days after the issuance of Amendment No. 3. The 30 day period of time is provided in order that you may modify procedures to conform with the details of the enclosed fire protection Appendix A Technical Specifications and to complete any required personnel training where necessary. The page changes for Appendix B are editorial and do not impact the substance of the Technical Specifications. Amendment No. 3 is effective as of the date of issuance. This amendment authorizes the Virginia Electric & Power Company to operate the North Anna Power Station, Unit No. 1 at reactor core power levels not in excess of 2775 megawatts thermal (100% power).

However, the operation of Unit No. 1 is temporarily restricted to a hot standby condition (modified operational Mode 3) until completion of a construction related item as defined in attachment 1 to the license. This item must be completed prior to achieving initial criticality. There is also a construction item that must be completed one week after the entry into Mode 2. The removal of these items will be made by letter to the licensee after satisfactory completion.

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Virginia Electric & Power
Company

APR 1 1978

A copy of the Federal Register Notice concerning issuance of Amendment No. 3 and the related Safety Evaluation supporting Amendment No. 3 to License No. NPF-4 are also enclosed.

Sincerely,
/s/
R. C. DeYoung for
Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 3 to Facility
   Operating License No. NPF-4
   with page changes to Appendices
   A and B
2. Federal Register Notice
3. Safety Evaluation Report

~~DSE/EP 2~~
F. Hebdon/~~W. Regan~~
/ /78

OFFICE	LWR #3/LA/DPM	OELD	LWR #3:BC	LWR:A/D	DPM	DPM
SURNAME	MRushbrook ADromerick	DSwanson	OParr	DVassallo	[illegible]ung	[illegible]
DATE	3/31/78	3/31/78	4/1/78	4/1/78	4/1/78	4/1/78

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Analyses Branch (AW-459)
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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

FACILITY OPERATING LICENSE

License No. NPF-4
Amendment No. 3

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The issuance of this license amendment issued to the Virginia Electric and Power Company for the North Anna Power Station, Unit No. 1 (facility) 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, as amended, 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 to the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;

   D. The licensee is technically and financially qualified to engage in the activities authorized by this amendment to the operating license in accordance with the rules and regulations of the Commission;

   E. The licensee has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;

   F. The issuance of this amendment to the operating license will not be inimical to the common defense and security or to the health and safety of the public;

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G. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Amendment No. 3 to Facility Operating License No. NPF-4 subject to the conditions for protection of the environment set forth herein is in accordance with Appendix D to 10 CFR Part 50 of the Commission's regulations and all applicable requirements have been satisfied; and

H. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this amendment to the license will be in accordance with the Commission's regulations in 10 CFR Part 30, 40, and 70, including 10 CFR Section 30.33, 40.32, and 70.23 and 70.31.

2. Amendment No. 3 hereby amends Facility Operating License No. NPF-4 to the Virginia Electric and Power Company (licensee) in its entirety to read as follows:

A. This amendment to the license applies to the North Anna Power Station, Unit No. 1, a pressurized water reactor and associated equipment (the facility), owned by the Virginia Electric and Power Company. The facility is located near Mineral, in Louisa County, Virginia, and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 17 through 64) and the Environmental Report as supplemented and amended (Supplements 1 through 4, Appendix L).

B. The licensee is authorized to perform steam generator moisture carryover studies at the North Anna Power Station. These studies involve the use of an aqueous tracer solution of two (2) curies of sodium-24. The licensee's personnel will be in charge of conducting these studies and be knowledgeable in the procedures. The licensee will impose personnel exposure limits, posting, and survey requirements in conformance with those in 10 CFR Part 20 to minimize personnel exposure and contamination during the studies. Radiological controls will be established in the areas of the chemical feed, feedwater, steam, condensate and sampling systems where the presence of the radioactive tracer is expected to warrant such controls. The licensee will take special precautions to minimize radiation exposure and contamination during both the handling of the radioactive tracer prior to injection and the taking of system samples following injection of the tracer. The licensee will insure that all regulatory requirements for liquid discharge are met during disposal of all sampling effluents and when reestablishing continuous blowdown from the steam generators after completion of the studies.

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C. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the Virginia Electric and Power Company:

(1) Pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess, use, and operate the facility at the designated location in Louisa County, Virginia in accordance with the procedures and limitations set forth in this amendment to the license;

(2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

D. This amendment to the license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

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(1) Maximum Power Level

a. The licensee is authorized to operate the North Anna Power Station, Unit No. 1 at reactor core power levels not in excess of 2775 megawatts (thermal). Prior to entry into Mode 2 for initial criticality, the Virginia Electric and Power Company shall comply with the construction item listed in Attachment 1.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B to the original NPF-4 North Anna Power Station, Unit No. 1 license issued on November 26, 1977 and Appendices A and B page changes attached to Amendment No. 1 to NPF-4 issued on January 26, 1978 are hereby incorporated into this license. Additional page changes to Appendices A and B are attached and become a part of this license. The licensee shall operate the facility in accordance with the Technical Specifications except for the following specific exemptions:

a. The provisions of Specification 4.0.4 are not applicable to the performance of surveillance activities associated with fire protection technical specification 4.3.3.7.1, 4.3.3.7.2, 4.3.3.7.3, 4.7.14.1.1, 4.7.14.1.2, 4.7.14.1.3, 4.7.14.2, 4.7.14.3, 4.7.14.4, 4.7.14.5 and 4.7.15 until the completion of the initial surveillance interval associated with each specification;

b. The licensee shall be exempted from compliance with the following Appendix A Technical Specifications applying to charcoal testing until (1) the first regularly scheduled refueling outage, or (2) the currently installed charcoal is replaced, whichever occurs first:

4.6.4.3.c
4.7.7.1.c
4.7.8.1.c

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c. Prior to initial criticality only, the licensee shall be exempted from compliance with the following Appendix A Technical Specifications:

3.5.2.b
4.5.2.e.2.b
4.5.2.f.2
3.5.3.b
4.0.5.a.1 as applicable to inservice inspection and testing of the Low Head Safety Injection Pumps.

d. Prior to initial criticality only, the following Appendix A Technical Specifications are modified, to read:

3.5.2.c: "An operable flow path capable of transferring fluid to the Reactor Coolant System when taking suction from the refueling water storage tank on a safety injection signal."

4.5.2.a: "At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
a. MOV-1836	a. Ch pump to cold leg	a. closed
b. MOV-1869A	b. Ch pump to hot leg	b. closed
c. MOV-1869B	c. Ch pump to hot leg	c. closed

3.5.3.c: "An operable flow path capable of transferring fluid to the reactor coolant system when taking suction from the refueling water storage tank upon being manually realigned."

e. Prior to initial criticality only, the licensee shall be exempted from compliance with the following Appendix A Technical Specifications:

3.6.2.2
4.6.2.2.b
4.0.5.a.1
4.6.3.1.3

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of this amendment or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the license supported by a favorable evaluation by the Commission:

a. Virginia Electric and Power Company shall perform secondary flow stability tests prior to achieving 100 percent power. The procedures for these tests shall be reviewed and approved by the office of Nuclear Reactor Regulation prior to initiation of the tests.

b. Prior to startup following the first regularly scheduled refueling outage, Virginia Electric and Power Company shall install a long-term means of protection against reactor coolant system overpressurization.

c. Virginia Electric and Power Company shall not operate the reactor in operational modes 1 and 2 with less than three reactor coolant pumps in operation.

d. Prior to startup following the first regularly scheduled refueling outage, the Virginia Electric and Power Company shall implement the final design modification of the recirculation spray system with respect to the available net positive suction head.

e. Until the modification stated in D.(3)d. is implemented to the satisfaction of the Commission, to assure that adequate net positive suction head is available to the recirculation spray pumps (1) the refueling water storage tank water temperature shall not exceed 40 degrees Fahrenheit, (2) the service water temperature shall be maintained between 35 degrees Fahrenheit and 80 degrees Fahrenheit, (3) the containment atmosphere temperature shall be maintained between 86 degrees Fahrenheit and 105 degrees Fahrenheit and (4) the containment air partial pressure shall be maintained in accordance with Figure 1 (attached).

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e. If Virginia Electric and Power Company plans to remove or to make significant changes in the normal operation of equipment that controls the amount of radioactivity in effluents from the North Anna Station, the Commission shall be notified in writing regardless of whether the change affects the amount of radioactivity in the effluents.

f. Prior to startup following the first regularly scheduled refueling outage, Virginia Electric and Power Company shall implement the "Administrative Procedures, Controls, and Fire Brigade Program" and the "Quality Assurance Program" associated with the fire protection program for North Anna, Unit 1.

Prior to startup following the second regularly scheduled refueling outage, Virginia Electric and Power Company shall implement the fire protection program modifications.

g. Virginia Electric and Power Company shall submit for Commission review within six months of the date of issuance of this amendment to the operating license the following values for each Reactor Protection System and Engineered Safeguards Features instrumentation channel:

(1) the technical specification trip setpoint value;

(2) the technical specification allowable value (the technical specification trip setpoint plus the instrument drift assumed in the accident analysis);

h. The Virginia Electric and Power Company shall install qualified stem mounted limit switches for the 21 in-containment isolation valves prior to startup following the first regularly scheduled refueling outage.

i. Prior to the first regularly scheduled refueling outage, the Virginia Electric and Power Company shall install and have operational the area ambient temperature monitoring system outside containment.

Prior to the installation of the area ambient temperature monitoring system outside containment, the Virginia Electric and Power Company shall monitor and log the temperature on a daily basis of areas outside containment, as specified

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in Table 1 (attached). Should the temperature in these Class 1E areas exceed the associated equipment rating during this period, the licensee is required to report such an occurrence and provide an analysis to demonstrate acceptability of the Class 1E equipment in that area.

j. The Virginia Electric and Power Company shall provide for staff review the results of proper sequential qualification testing performed for (1) Barton 386/752, (2) Barton 393 and (3) Foxboro E11GM (MCA/RRW), transmitters used in safety related circuits inside containment. Test conditions must include sequential radiation exposure, seismic testing and exposure to environmental conditions expected following a postulated steamline break and/or loss-of-coolant accident whichever is most limiting. The results of this testing shall be provided no later than 90 days from issuance of this amendment.

k. Within 15 days of the issuance of this amendment, confirmatory testing of the Unit 2 outside recirculation spray pump shall be initiated. The confirmatory testing shall consist of a pump test of 450 hours to be accomplished as follows:

The outside Unit 2 recirculation spray pump that was previously tested by the Virginia Electric and Power Company shall be reassembled using the bearings and shaft sections from the six day test. The assembly and alignment procedures used in the six day test shall be employed. The test shall be run at nominal full flow with the test water conditions as follows: (1) temperature to be maintained between 120 degrees Fahrenheit and 130 degrees Fahrenheit, (2) the boron concentration shall be approximately 1800 parts per million plus or minus 100 parts per million and sufficient sodium hydroxide shall be added to bring the water to a pH of 8, and (3) debris concentration shall be consistent with concentration determined previously for the six day test.

In addition to normally installed instrumentation, the following instrumentation is required:

1. Accelerometers combined with integrating charge amplifier with a frequency response of:

   a. 100 hz - 100 Khz at ± 12 db in the acceleration mode.

   b. 3 hz - 5 Khz at ± 3 db in the velocity mode.

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2. High pass filter with frequency of 20 Khz with 48 db per octave filter cutoff.

3. Demodulator.

4. Low pass filter with frequency of 5 Khz with 48 db per octave filter cutoff.

5. Pressure transducers with frequency response of 0-1 Khz with output capable of being taped.

6. Tachometer with output capable of being taped.

7. FM tape recorder capable of recording all channels of data simultaneously (at least ten channels) with frequency response of 0 - 5 Khz.

The above instrumentation shall be mounted as follows:

1. An orthogonal pair of accelerometers should be mounted perpendicular to the pump axis on the top of the pump motor and at the following locations on the pump column:

   a. At Bearing No. 2

   b. At Bearing No. 3

   c. At Bearing No. 5

   d. At Bearing No. 7

2. Pressure transducers should sense the following locations:

   a. As close to suction of pump as possible.

   b. In pump discharge at discharge of pump bowls.

   c. In pump discharge at discharge flange of pump.

Data shall be taped at the following times:

At startup and for one hour following startup, at four hours, at eight hours, at 12 hours, at 16 hours, at 20 hours, at 24 hours, at 426 hours, at 438 hours, and at 15 minutes before shutdown as well as during the coastdown following pump trip. At the above times, data from all pressure probes shall be recorded. Additionally, the odd numbered accelerometers (1, 3, 5, 7, and 9) shall be recorded in the velocity mode while the even numbered accelerometers (2, 4, 6, 8, and 10) shall be recorded in the demodulated acceleration mode.

Throughout the test, the test water should be periodically sampled to determine the concentration and size of debris.

Other normally measured pump parameters shall be recorded as required by standard operating procedures.

Measurements of the journal and bearing surfaces shall be made prior to and at the completion of the pump test.

l. Within ten days of the completion of the confirmatory testing of the outside recirculation spray pump the Virginia Electric and Power Company shall initiate long-term testing of the low head safety injection pump. The length of testing, test conditions, and instrumentation for this testing shall be in accordance with requirements to be specified by the Commission.

m. The Virginia Electric and Power Company shall submit to the Commission by, May 1, 1978, a vibration modal analysis of the inside recirculation spray pumps.

n. The Virginia Electric and Power Company shall incorporate, by April 15, 1978, procedures which ensure that in the long-term cooling mode following a loss-of-coolant accident redundant pumps are secured once stable conditions are established in order to maintain a high degree of reliability with regard to system capability and flexibility for long-term cooling.

E. Virginia Electric and Power Company shall maintain in effect and fully implement all provisions of the physical security plan approved by the Commission, including amendments and changes made pursuant to the authority of 10 CFR 50.54(p). The approved security plan consists of proprietary documents, collectively titled, "Security Program, North Anna Power Station, Units 1 and 2," as follows: Original submitted with letter, dated February 1974, as revised on July 15, 1975, and on September 15, 1977; and additional information submitted by letter dated September 23, 1977. In addition to the provisions of the licensee's security plan, the licensee shall perform or shall obtain written confirmation of the performance by others of the personnel screening and background investigations, as specified in ANSI N18.17, for non-licensee employees prior to granting them un-escorted access to the protected area.

Pursuant to 10 CFR Section 2.790(d), the security plan is being withheld from public disclosure because it is deemed to be proprietary information within the meaning of 10 CFR Section 9.5(a)(4) and subject to disclosure only in accordance with 10 CFR Section 9.12.

F. This amendment to the license is subject to the following additional condition for the protection of the environment:

(1) Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensee will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated, in the Final Environmental Statement or any addendum thereto, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

G. In accordance with the requirement imposed by the October 8, 1976, order of the United States Court of Appeals for the District of Columbia Circuit in Natural Resources Defense Council vs. Nuclear Regulatory Commission, No. 74-1385 and 74-1586 (cert. granted sub nom Vermont Yankee Nuclear Power Corp. vs. Natural Resources Defense Council, 45 U.S.L.W. 3570, February 22, 1977) that the Nuclear Regulatory Commission "shall make any licenses granted between July 21, 1976 and such time when the mandate is issued subject to the outcome of the proceedings herein," this amended license shall be subject to the outcome of such proceedings.

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F. This amendment to the license is subject to the following additional condition for the protection of the environment:

(1) Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensee will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated, in the Final Environmental Statement or any addendum thereto, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

G. In accordance with the requirement imposed by the October 8, 1976, order of the United States Court of Appeals for the District of Columbia Circuit in Natural Resources Defense Council vs. Nuclear Regulatory Commission, No. 74-1385 and 74-1586 (cert. granted sub nom Vermont Yankee Nuclear Power Corp. vs. Natural Resources Defense Council, 45 U.S.L.W. 3570, February 22, 1977) that the Nuclear Regulatory Commission "shall make any licenses granted between July 21, 1976 and such time when the mandate is issued subject to the outcome of the proceedings herein," this amended license shall be subject to the outcome of such proceedings.

H. This amended license is effective as of the date of issuance and shall expire at midnight, February 18, 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

/S/ R. C. DeYoung for

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Construction Related Items to be completed prior to Initial Criticality
2. Appendices A and B Technical Specification page changes
3. Figure 1
4. Table 1

Date of Issuance: APR 1 1978

~~EP-2 F. Hebdon / /78~~ ~~DSE/EP-2 W. Regan / /78~~

OFFICE	DPM/LWR-3	OELD	LWR-3	A/D LWR	DD:DPM	D:DPM
SURNAME	MRushbrook/ ADromerick	DSwanson	ODParr	DVassallo	RCDeYoung	RSBoyd
DATE	3/31/78	3/31/78	4/1/78	4/1/78	4/1/78	4/1/78

H. This amended license is effective as of the date of issuance and shall expire at midnight, February 18, 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/ R.C. DeYoung for

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Construction Related Items to be completed prior to Initial Criticality
2. Appendices A and B Technical Specification page changes
3. Figure 1
4. Table 1

Date of Issuance: APR 1 1978

See previous yellow for concurrences

OFFICE➤	DPM/LWR #3	OELD	LWR #3:DPM	AD/LWR	DD:DPM	D:DPM
SURNAME➤	MRushbrook ADromerick/LM	DSwanson	ODParr	DBVassallo	RCDeYoung	RSBoyd
DATE➤	4/ 1 /78	4/ /78	4/ /78	4/ /78	4/ /78	4/ /78

ATTACHMENT 1

CONSTRUCTION RELATED ITEMS TO BE COMPLETED

This attachment identifies certain items which must be completed to the Commission's satisfaction in accordance with the schedule listed below. The Virginia Electric and Power Company shall not proceed beyond the authorized events without prior written authorization from the Commission.

A. Prior to initial criticality, the Virginia Electric and Power Company shall operate Unit 1 in the cold shutdown and hot standby conditions only under the following conditions:

1. The reactor shall be maintained at a K_{eff} of no greater than 0.90 when in a cold shutdown condition (Operational Mode 5 condition).

2. The reactor shall be maintained at an average reactor coolant temperature at or above 350 degrees Fahrenheit with a K_{eff} of 0.90 or less and a reactor coolant system minimum boron concentration of 2000 parts per million when in a hot standby condition. This mode of operation is a modification of Operational Mode 3 stated in the Technical Specifications, Appendix A.

B. The following item must be completed prior to entry into operational Mode 2 for initial criticality:

1. Reverification of reactor coolant and other Class I systems expansion and restraint measurements at normal temperature and pressure.

C. The following item must be completed one week following entry into operational Mode 2:

1. Completion of the handwheel extension to the cross connect valves associated with the recirculation spray system.

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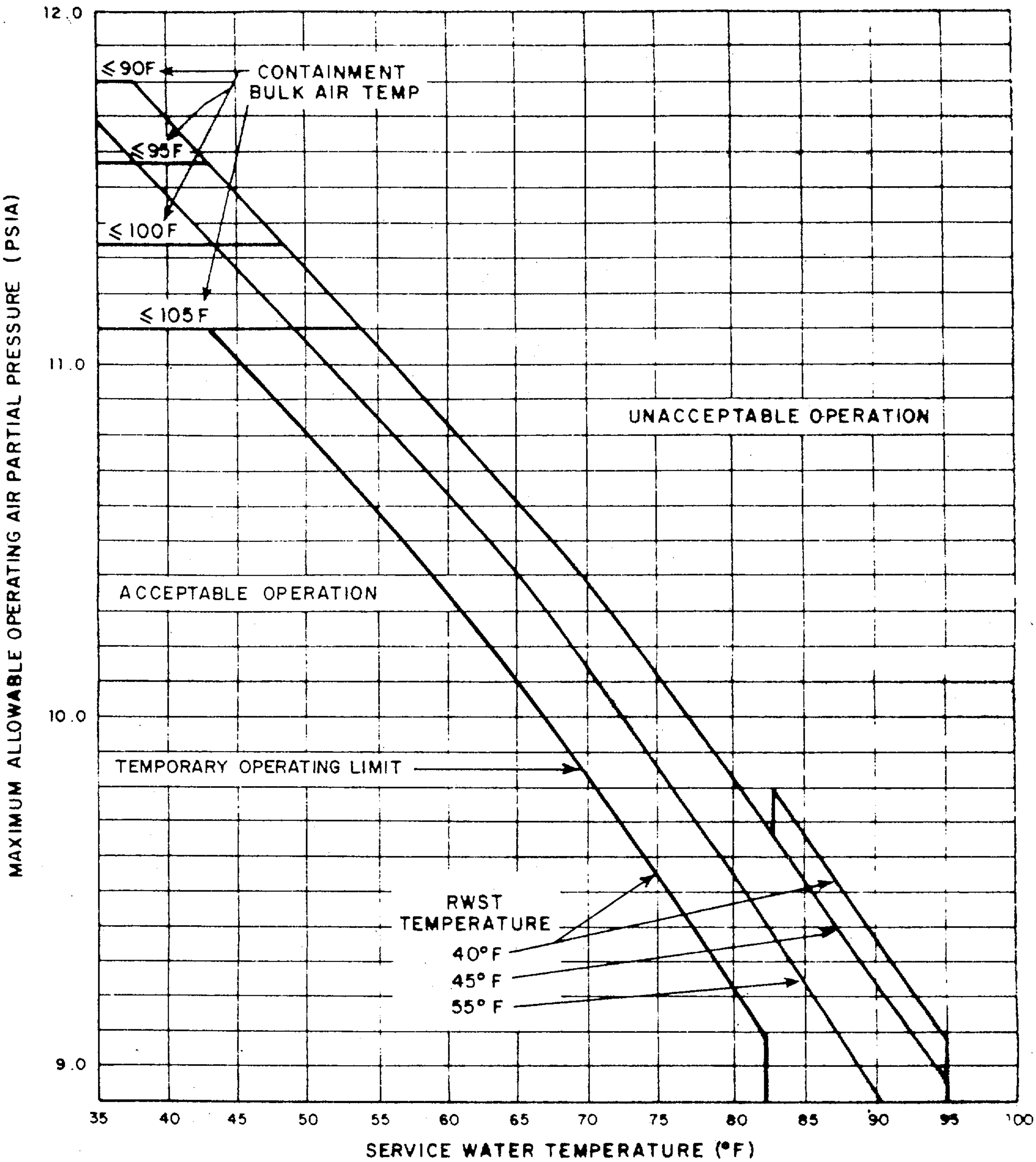

SET POINT VALUE IN CONTAINMENT VACUUM SYSTEM INSTRUMENTATION SHOULD BE AT LEAST 0.25 PSI BELOW APPLICABLE RWST TEMPERATURE LIMIT CURVE

THESE OPERATING CURVES REQUIRE THAT THE AVERAGE CONTAINMENT TEMPERATURE DOES NOT LIE BELOW 86°F AS THE LOWER BOUND THE UPPER BOUND IS 105°F EXCEPT AS NOTED

FIGURE 1
MAXIMUM ALLOWABLE PRIMARY CONTAINMENT AIR PARTIAL PRESSURE VS SERVICE WATER TEMPERATURE AND RWST WATER TEMPERATURE
NORTH ANNA POWER STATION
UNIT 1

ATTACHMENT 4

TABLE 1

AREA TEMPERATURE MONITORING

EQUIPMENT IDENTIFICATION	LOCATION	EQUIPMENT RATING (Degree Fahrenheit) MIN	MAX
Pressurizer Heater Control	Rod Drive Room	32	104
480 V Switchgear	Rod Drive Room	-22	104
4 MV Motors	Auxiliary Feedwater Pump House	50	104
	Auxiliary Bldg	50	104
Motor Control Centers	Cable Tunnel	32	104
	Service Water Pump House	32	104
Batteries	Emergency Switchgear Room	60	80
	Cable Spreading Room	60	80
Service Water Pumps	Service Water Pump House	32	104
Traveling Water Screens	Service Water Pump House	32	104
Service Water Ventilation	Service Water Pump House	32	104
Instrument Air Compressors	Auxiliary Building	32	104
Safeguards Area Exhaust	Auxiliary Building	32	104

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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

FACILITY OPERATING LICENSE

License No. NPF-4
Amendment No. 3

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The issuance of this license amendment issued to the Virginia Electric and Power Company for the North Anna Power Station, Unit No. 1 (facility) 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, as amended, 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 to the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;

   D. The licensee is technically and financially qualified to engage in the activities authorized by this amendment to the operating license in accordance with the rules and regulations of the Commission;

   E. The licensee has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;

   F. The issuance of this amendment to the operating license will not be inimical to the common defense and security or to the health and safety of the public;

G. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Amendment No. 3 to Facility Operating License No. NPF-4 subject to the conditions for protection of the environment set forth herein is in accordance with Appendix D to 10 CFR Part 50 of the Commission's regulations and all applicable requirements have been satisfied; and

H. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this amendment to the license will be in accordance with the Commission's regulations in 10 CFR Part 30, 40, and 70, including 10 CFR Section 30.33, 40.32, and 70.23 and 70.31.

2. Amendment No. 3 hereby amends Facility Operating License No. NPF-4 to the Virginia Electric and Power Company (licensee) in its entirety to read as follows:

A. This amendment to the license applies to the North Anna Power Station, Unit No. 1, a pressurized water reactor and associated equipment (the facility), owned by the Virginia Electric and Power Company. The facility is located near Mineral, in Louisa County, Virginia, and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 17 through 64) and the Environmental Report as supplemented and amended (Supplements 1 through 4, Appendix L).

B. The licensee is authorized to perform steam generator moisture carryover studies at the North Anna Power Station. These studies involve the use of an aqueous tracer solution of two (2) curies of sodium-24. The licensee's personnel will be in charge of conducting these studies and be knowledgeable in the procedures. The licensee will impose personnel exposure limits, posting, and survey requirements in conformance with those in 10 CFR Part 20 to minimize personnel exposure and contamination during the studies. Radiological controls will be established in the areas of the chemical feed, feedwater, steam, condensate and sampling systems where the presence of the radioactive tracer is expected to warrant such controls. The licensee will take special precautions to minimize radiation exposure and contamination during both the handling of the radioactive tracer prior to injection and the taking of system samples following injection of the tracer. The licensee will insure that all regulatory requirements for liquid discharge are met during disposal of all sampling effluents and when reestablishing continuous blowdown from the steam generators after completion of the studies.

C. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the Virginia Electric and Power Company:

(1) Pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess, use, and operate the facility at the designated location in Louisa County, Virginia in accordance with the procedures and limitations set forth in this amendment to the license;

(2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

D. This amendment to the license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

a. The licensee is authorized to operate the North Anna Power Station, Unit No. 1 at reactor core power levels not in excess of 2775 megawatts (thermal). Prior to entry into Mode 2 for initial criticality, the Virginia Electric and Power Company shall comply with the construction item listed in Attachment 1.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B to the original NPF-4 North Anna Power Station, Unit No. 1 license issued on November 26, 1977 and Appendices A and B page changes attached to Amendment No. 1 to NPF-4 issued on January 26, 1978 are hereby incorporated into this license. Additional page changes to Appendices A and B are attached and become a part of this license. The licensee shall operate the facility in accordance with the Technical Specifications except for the following specific exemptions:

a. The provisions of Specification 4.0.4 are not applicable to the performance of surveillance activities associated with fire protection technical specification 4.3.3.7.1, 4.3.3.7.2, 4.3.3.7.3, 4.7.14.1.1, 4.7.14.1.2, 4.7.14.1.3, 4.7.14.2, 4.7.14.3, 4.7.14.4, 4.7.14.5 and 4.7.15 until the completion of the initial surveillance interval associated with each specification;

b. The licensee shall be exempted from compliance with the following Appendix A Technical Specifications applying to charcoal testing until (1) the first regularly scheduled refueling outage, or (2) the currently installed charcoal is replaced, whichever occurs first:

4.6.4.3.c
4.7.7.1.c
4.7.8.1.c

c. Prior to initial criticality only, the licensee shall be exempted from compliance with the following Appendix A Technical Specifications:

3.5.2.b
4.5.2.e.2.b
4.5.2.f.2
3.5.3.b
4.0.5.a.1 as applicable to inservice inspection and testing of the Low Head Safety Injection Pumps.

d. Prior to initial criticality only, the following Appendix A Technical Specifications are modified, to read:

3.5.2.c: "An operable flow path capable of transferring fluid to the Reactor Coolant System when taking suction from the refueling water storage tank on a safety injection signal."

4.5.2.a: "At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
a. MOV-1836	a. Ch pump to cold leg	a. closed
b. MOV-1869A	b. Ch pump to hot leg	b. closed
c. MOV-1869B	c. Ch pump to hot leg	c. closed

3.5.3.c: "An operable flow path capable of transferring fluid to the reactor coolant system when taking suction from the refueling water storage tank upon being manually realigned."

e. Prior to initial criticality only, the licensee shall be exempted from compliance with the following Appendix A Technical Specifications:

3.6.2.2
4.6.2.2.b
4.0.5.a.1
4.6.3.1.3

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of this amendment or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the license supported by a favorable evaluation by the Commission:

a. Virginia Electric and Power Company shall perform secondary flow stability tests prior to achieving 100 percent power. The procedures for these tests shall be reviewed and approved by the office of Nuclear Reactor Regulation prior to initiation of the tests.

b. Prior to startup following the first regularly scheduled refueling outage, Virginia Electric and Power Company shall install a long-term means of protection against reactor coolant system overpressurization.

c. Virginia Electric and Power Company shall not operate the reactor in operational modes 1 and 2 with less than three reactor coolant pumps in operation.

d. Prior to startup following the first regularly scheduled refueling outage, the Virginia Electric and Power Company shall implement the final design modification of the recirculation spray system with respect to the available net positive suction head.

e. Until the modification stated in D.(3)d. is implemented to the satisfaction of the Commission, to assure that adequate net positive suction head is available to the recirculation spray pumps (1) the refueling water storage tank water temperature shall not exceed 40 degrees Fahrenheit, (2) the service water temperature shall be maintained between 35 degrees Fahrenheit and 80 degrees Fahrenheit, (3) the containment atmosphere temperature shall be maintained between 86 degrees Fahrenheit and 105 degrees Fahrenheit and (4) the containment air partial pressure shall be maintained in accordance with Figure 1 (attached).

e. If Virginia Electric and Power Company plans to remove or to make significant changes in the normal operation of equipment that controls the amount of radioactivity in effluents from the North Anna Station, the Commission shall be notified in writing regardless of whether the change affects the amount of radioactivity in the effluents.

f. Prior to startup following the first regularly scheduled refueling outage, Virginia Electric and Power Company shall implement the "Administrative Procedures, Controls, and Fire Brigade Program" and the "Quality Assurance Program" associated with the fire protection program for North Anna, Unit 1.

   Prior to startup following the second regularly scheduled refueling outage, Virginia Electric and Power Company shall implement the fire protection program modifications.

g. Virginia Electric and Power Company shall submit for Commission review within six months of the date of issuance of this amendment to the operating license the following values for each Reactor Protection System and Engineered Safeguards Features instrumentation channel:

   (1) the technical specification trip setpoint value;

   (2) the technical specification allowable value (the technical specification trip setpoint plus the instrument drift assumed in the accident analysis);

h. The Virginia Electric and Power Company shall install qualified stem mounted limit switches for the 21 in-containment isolation valves prior to startup following the first regularly scheduled refueling outage.

i. Prior to the first regularly scheduled refueling outage, the Virginia Electric and Power Company shall install and have operational the area ambient temperature monitoring system outside containment.

   Prior to the installation of the area ambient temperature monitoring system outside containment, the Virginia Electric and Power Company shall monitor and log the temperature on a daily basis of areas outside containment, as specified in Table 1 (attached). Should the temperature in these Class 1E areas exceed the associated equipment rating during this period, the licensee is required to report such an occurrence and provide an analysis to demonstrate acceptability of the Class 1E equipment in that area.

j. The Virginia Electric and Power Company shall provide for staff review the results of proper sequential qualification testing performed for (1) Barton 386/752, (2) Barton 393 and (3) Foxboro E11GM (MCA/RRW), transmitters used in safety related circuits inside containment. Test conditions must include sequential radiation exposure, seismic testing and exposure to environmental conditions expected following a postulated steamline break and/or loss-of-coolant accident whichever is most limiting. The results of this testing shall be provided no later than 90 days from issuance of this amendment.

k. Within 15 days of the issuance of this amendment, confirmatory testing of the Unit 2 outside recirculation spray pump shall be initiated. The confirmatory testing shall consist of a pump test of 450 hours to be accomplished as follows:

The outside Unit 2 recirculation spray pump that was previously tested by the Virginia Electric and Power Company shall be reassembled using the bearings and shaft sections from the six day test. The assembly and alignment procedures used in the six day test shall be employed. The test shall be run at nominal full flow with the test water conditions as follows: (1) temperature to be maintained between 120 degrees Fahrenheit and 130 degrees Fahrenheit, (2) the boron concentration shall be approximately 1800 parts per million plus or minus 100 parts per million and sufficient sodium hydroxide shall be added to bring the water to a pH of 8, and (3) debris concentration shall be consistent with concentration determined previously for the six day test.

In addition to normally installed instrumentation, the following instrumentation is required:

1. Accelerometers combined with integrating charge amplifier with a frequency response of:

    a. 100 hz - 100 Khz at ±12 db in the acceleration mode.

    b. 3 hz - 5 Khz at ±3 db in the velocity mode.

2. High pass filter with frequency of 20 Khz with 48 db per octave filter cutoff.

3. Demodulator.

4. Low pass filter with frequency of 5 Khz with 48 db per octave filter cutoff.

5. Pressure transducers with frequency response of 0-1 Khz with output capable of being taped.

6. Tachometer with output capable of being taped.

7. FM tape recorder capable of recording all channels of data simultaneously (at least ten channels) with frequency response of 0 - 5 Khz.

The above instrumentation shall be mounted as follows:

1. An orthogonal pair of accelerometers should be mounted perpendicular to the pump axis on the top of the pump motor and at the following locations on the pump column:

    a. At Bearing No. 2

    b. At Bearing No. 3

    c. At Bearing No. 5

    d. At Bearing No. 7

2. Pressure transducers should sense the following locations:

    a. As close to suction of pump as possible.

    b. In pump discharge at discharge of pump bowls.

    c. In pump discharge at discharge flange of pump.

Data shall be taped at the following times:

At startup and for one hour following startup, at four hours, at eight hours, at 12 hours, at 16 hours, at 20 hours, at 24 hours, at 426 hours, at 438 hours, and at 15 minutes before shutdown as well as during the coastdown following pump trip. At the above times, data from all pressure probes shall be recorded. Additionally, the odd numbered accelerometers (1, 3, 5, 7, and 9) shall be recorded in the velocity mode while the even numbered accelerometers (2, 4, 6, 8, and 10) shall be recorded in the demodulated acceleration mode.

Throughout the test, the test water should be periodically sampled to determine the concentration and size of debris.

Other normally measured pump parameters shall be recorded as required by standard operating procedures.

Measurements of the journal and bearing surfaces shall be made prior to and at the completion of the pump test.

l. Within ten days of the completion of the confirmatory testing of the outside recirculation spray pump the Virginia Electric and Power Company shall initiate long-term testing of the low head safety injection pump. The length of testing, test conditions, and instrumentation for this testing shall be in accordance with requirements to be specified by the Commission.

m. The Virginia Electric and Power Company shall submit to the Commission by, May 1, 1978, a vibration modal analysis of the inside recirculation spray pumps.

n. The Virginia Electric and Power Company shall incorporate, by April 15, 1978, procedures which ensure that in the long-term cooling mode following a loss-of-coolant accident redundant pumps are secured once stable conditions are established in order to maintain a high degree of reliability with regard to system capability and flexibility for long-term cooling.

E. Virginia Electric and Power Company shall maintain in effect and fully implement all provisions of the physical security plan approved by the Commission, including amendments and changes made pursuant to the authority of 10 CFR 50.54(p). The approved security plan consists of proprietary documents, collectively titled, "Security Program, North Anna Power Station, Units 1 and 2," as follows: Original submitted with letter, dated February 1974, as revised on July 15, 1975, and on September 15, 1977; and additional information submitted by letter dated September 23, 1977. In addition to the provisions of the licensee's security plan, the licensee shall perform or shall obtain written confirmation of the performance by others of the personnel screening and background investigations, as specified in ANSI N18.17, for non-licensee employees prior to granting them un-escorted access to the protected area.

Pursuant to 10 CFR Section 2.790(d), the security plan is being withheld from public disclosure because it is deemed to be proprietary information within the meaning of 10 CFR Section 9.5(a)(4) and subject to disclosure only in accordance with 10 CFR Section 9.12.

F. This amendment to the license is subject to the following additional condition for the protection of the environment:

(1) Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensee will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated, in the Final Environmental Statement or any addendum thereto, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

G. In accordance with the requirement imposed by the October 8, 1976, order of the United States Court of Appeals for the District of Columbia Circuit in Natural Resources Defense Council vs. Nuclear Regulatory Commission, No. 74-1385 and 74-1586 (cert. granted sub nom Vermont Yankee Nuclear Power Corp. vs. Natural Resources Defense Council, 45 U.S.L.W. 3570, February 22, 1977) that the Nuclear Regulatory Commission "shall make any licenses granted between July 21, 1976 and such time when the mandate is issued subject to the outcome of the proceedings herein," this amended license shall be subject to the outcome of such proceedings.

H. This amended license is effective as of the date of issuance and shall expire at midnight, February 18, 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

R C DeYoung, for

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Construction Related Items to be completed prior to Initial Criticality
2. Appendices A and B Technical Specification page changes
3. Figure 1
4. Table 1

Date of Issuance: APR 1 1978

ATTACHMENT 1

CONSTRUCTION RELATED ITEMS TO BE COMPLETED

This attachment identifies certain items which must be completed to the Commission's satisfaction in accordance with the schedule listed below. The Virginia Electric and Power Company shall not proceed beyond the authorized events without prior written authorization from the Commission.

A. Prior to initial criticality, the Virginia Electric and Power Company shall operate Unit 1 in the cold shutdown and hot standby conditions only under the following conditions:

1. The reactor shall be maintained at a K_{eff} of no greater than 0.90 when in a cold shutdown condition (Operational Mode 5 condition).

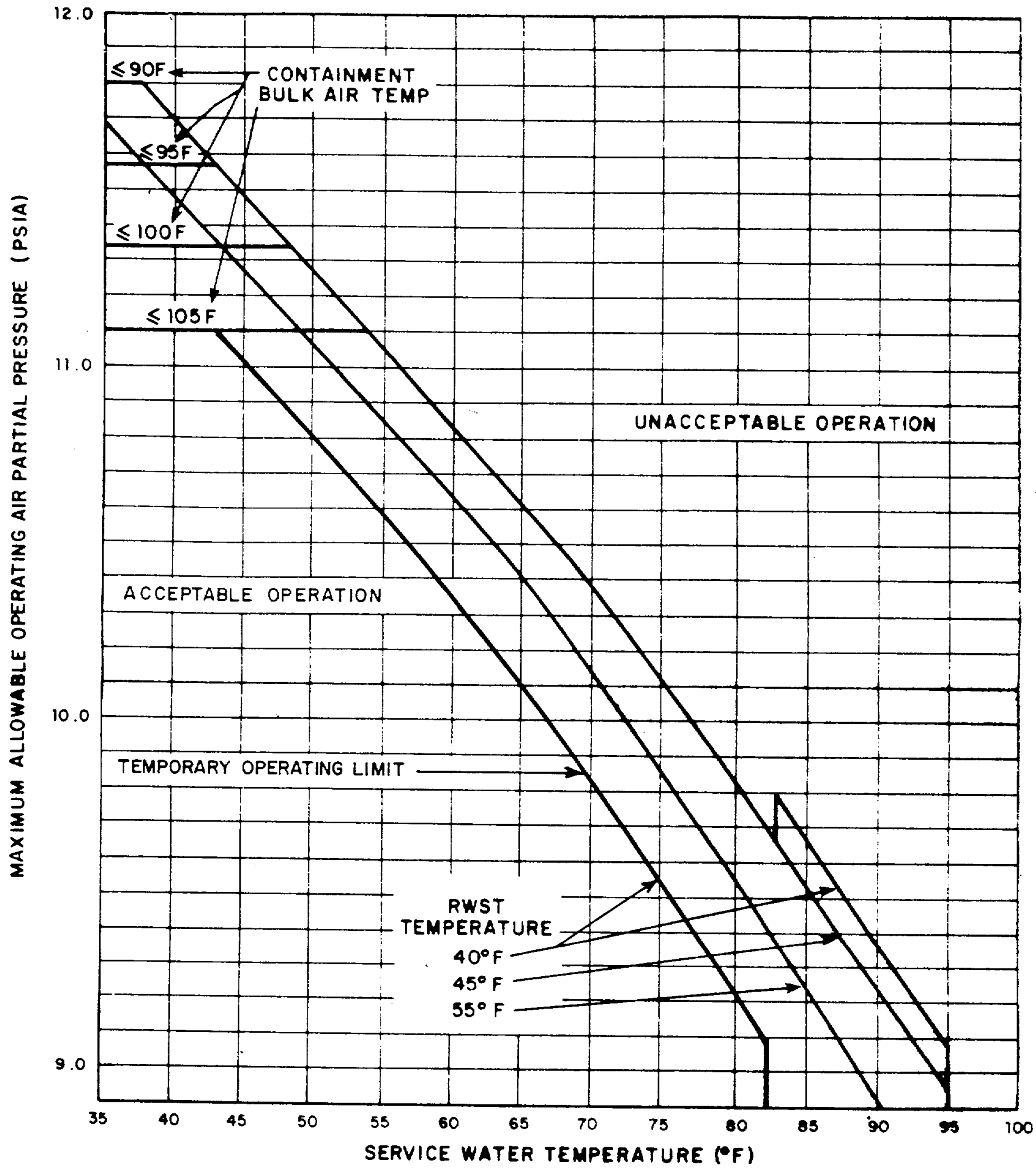
2. The reactor shall be maintained at an average reactor coolant temperature at or above 350 degrees Fahrenheit with a K_{eff} of 0.90 or less and a reactor coolant system minimum boron concentration of 2000 parts per million when in a hot standby condition. This mode of operation is a modification of Operational Mode 3 stated in the Technical Specifications, Appendix A.

B. The following item must be completed prior to entry into operational Mode 2 for initial criticality:

1. Reverification of reactor coolant and other Class I systems expansion and restraint measurements at normal temperature and pressure.

C. The following item must be completed one week following entry into operational Mode 2:

1. Completion of the handwheel extension to the cross connect valves associated with the recirculation spray system.



SET POINT VALUE IN CONTAINMENT VACUUM SYSTEM INSTRUMENTATION SHOULD BE AT LEAST 0.25 PSI BELOW APPLICABLE RWST TEMPERATURE LIMIT CURVE.
THESE OPERATING CURVES REQUIRE THAT THE AVERAGE CONTAINMENT TEMPERATURE DOES NOT LIE BELOW 86°F AS THE LOWER BOUND THE UPPER BOUND IS 105°F EXCEPT AS NOTED

FIGURE 1
MAXIMUM ALLOWABLE PRIMARY CONTAINMENT AIR PARTIAL PRESSURE VS SERVICE WATER TEMPERATURE AND RWST WATER TEMPERATURE
NORTH ANNA POWER STATION
UNIT 1

ATTACHMENT 4

TABLE 1

AREA TEMPERATURE MONITORING

EQUIPMENT IDENTIFICATION	LOCATION	EQUIPMENT RATING (Degree Fahrenheit) MIN	MAX
Pressurizer Heater Control	Rod Drive Room	32	104
480 V Switchgear	Rod Drive Room	-22	104
4 MV Motors	Auxiliary Feedwater Pump House	50	104
	Auxiliary Bldg	50	104
Motor Control Centers	Cable Tunnel	32	104
	Service Water Pump House	32	104
Batteries	Emergency Switchgear Room	60	80
	Cable Spreading Room	60	80
Service Water Pumps	Service Water Pump House	32	104
Traveling Water Screens	Service Water Pump House	32	104
Service Water Ventilation	Service Water Pump House	32	104
Instrument Air Compressors	Auxiliary Building	32	104
Safeguards Area Exhaust	Auxiliary Building	32	104

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-338

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NO. 1

NOTICE OF ISSUANCE OF AN AMENDMENT TO FACILITY OPERATING LICENSE

Notice is hereby given that the Nuclear Regulatory Commission (the Commission) has issued Amendment No. 3 to Facility Operating License No. NPF-4 to the Virginia Electric and Power Company authorizing operation of the North Anna Power Station, Unit No. 1 at reactor core power levels not in excess of 2775 megawatts thermal (100% power), in accordance with the provisions of the amended license and the Technical Specifications. However, the operation of Unit No. 1 is temporarily restricted to a hot standby condition (modified operational Mode 3) until completion of construction items as defined in the license have been completed to the satisfaction of the Commission. The amended license is effective as of its date of issuance and shall expire at midnight on February 19, 2011. NPF-4 issued on November 26, 1977 authorized fuel loading and maintenance of the North Anna Power Station, Unit No. 1 in an operational Mode 5 condition (cold shutdown condition). The Technical Specifications were attached to the license as Appendices A & B. Amendment No. 1 to NPF-4 issued on January 26, 1978 authorized the licensee to operate the North Anna Power Station, Unit 1 in a hot standby condition. Amendment No. 2 to NPF-4 issued on March 17, 1978 authorized an exemption to certain technical specifications contained in Appendix A. The North Anna Power Station, Unit No. 1 is a pressurized water nuclear reactor located at the licensee's site near Mineral in Louisa County, Virginia.

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DATE ➤						

The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the amended license. The application for the license complies with the standards and requirements of the Act and the Commission's rules and regulations. This action completes the licensing action encompassed in the "Notice of Receipt of Application for Facility Operating Licenses; Notice of Consideration of Issuance of Facility Operating License and Notice of Opportunity for Hearing", dated May 8, 1973.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section 51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action see a copy of (1) Amendment No. 3 to NPF-4; (2) Amendment No. 2 to NPF-4 with Appendix A Technical Specification page changes; (3) Amendment No. 1 to to NPF-4 with Appendix B Technical Specification page changes; (4) Facility Operating License No. NPF-4, complete with Technical Specifications (Appendices "A" and "B); (5) the report of the Advisory Committee on Reactor Safeguards, dated January 17, 1977; (6) the Office of Nuclear Reactor Regulation's Safety Evaluation Report dated June 4, 1976 and its nine supplements; (7) the Final

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Safety Analysis Report and amendments thereto; (8) the applicant's Environmental Report dated June 17, 1970 and supplements thereto; (9) the Draft Environmental Statement dated December 12, 1972; and (10) the Final Environmental Statement dated April 1973 and its Addendum, dated November 1976. These documents are available for public inspection at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D. C. at the County Administrator's Office, Louisa County Courthouse, P. O. Box 27, Louisa, Virginia 23093 and the Alderman Library Manuscripts Department, University of Virginia, Charlottesville, Virginia 22901. A copy of the amended license may be obtained upon request addressed to the United States Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Project Management.

Copies of the Safety Evaluation and its supplements (Document No. NUREG-0053) and the addendum to the Final Environmental Statement (Document No. NUREG-0134) may be purchased, at current costs, from the National Technical Information Service, Springfield, Virginia 22161.

Dated at Bethesda, Maryland, this 1st day of April, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

/S

Olan D. Parr, Chief
Light Water Reactors Branch No. 3
Division of Project Management

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SURNAME ➤	MRushbrook/LN	ARomerick	DSwanson	ODParr		
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BORON DILUTION

VALVE POSITION

LIMITING CONDITION FOR OPERATION

3.1.1.3.2 The following valves shall be locked, sealed or otherwise secured in the closed position except during planned boron dilution or makeup activities

a. 1-CH-217 or

b. 1-CH-220, 1-CH-241, FCV-1114B and FCV-1113B.

APPLICABILITY: MODES 3, 4, 5, and 6

ACTION:

With the above valves not locked, sealed or otherwise secured in the closed position:

a. In MODES 3 and 4 be in COLD SHUTDOWN within 30 hours

b. In MODES 5 and 6 suspend all operations involving positive reactivity changes or CORE ALTERATIONS and lock, seal or otherwise secure the valves in the closed position within 15 minutes.

SURVEILLANCE REQUIREMENTS

4.1.1.3.2 The above listed valves shall be verified to be locked, sealed or otherwise secured in the closed position within 15 minutes after a planned boron dilution or makeup activity.

MODERATOR TEMPERATURE COEFFICIENT

LIMITING CONDITION FOR OPERATION

3.1.1.4 The moderator temperature coefficient (MTC) shall be:

a. Less positive than 0 $\Delta k/k/°F$ for the all rods withdrawn, beginning of core life, hot zero THERMAL POWER condition, and

b. Less negative than -4.0×10^{-4} $\Delta k/k/°F$ for the all rods withdrawn, end of core life at RATED THERMAL POWER.

APPLICABILITY: Specification 3.1.1.4.a - MODES 1 and 2* only#
Specification 3.1.1.4.b - MODES 1, 2 and 3 only#

ACTION:

a. With the MTC more positive than the limit of 3.1.1.4.a above:

1. Establish and maintain control rod withdrawal limits sufficient to restore the MTC to within its limit within 24 hours or be in HOT STANDBY within the next 6 hours. These withdrawal limits shall be in addition to the insertion limits of Specification 3.1.3.6.

2. Maintain the control rods within the withdrawal limits established above until subsequent measurement verifies that the MTC has been restored to within its limit for the all rods withdrawn condition.

3. Prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 10 days, describing the value of the measured MTC, the interim control rod withdrawal limits and the predicted average core burnup necessary for restoring the positive MTC to within its limit for the all rods withdrawn condition.

b. With the MTC more negative than the limit of 3.1.1.4b above, be in HOT SHUTDOWN within 12 hours.

*With $K_{eff} \geq 1.0$

#See Special Test Exception 3.10.3

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 At least one charging pump in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no charging pump OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until one charging pump is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.3 At least the above required charging pump shall be demonstrated OPERABLE by verifying, that on recirculation flow, the pump develops a discharge pressure of $\geq$ 2410 psig when tested pursuant to Specification 4.0.5.

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 No more than two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4*.

ACTION:

With only one charging pump OPERABLE, restore a second charging pump to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1.77% $\Delta k/k$ at 200°F within the next 6 hours; restore a second charging pump to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours. The provisions of Specification 3.0.4 are not applicable for one hour prior to bubble formation or collapse in MODE 4.

SURVEILLANCE REQUIREMENTS

4.1.2.4 The above required charging pumps shall be demonstrated OPERABLE by verifying, that on recirculation flow, each pump develops a discharge pressure of $\geq$ 2410 psig when tested pursuant to Specification 4.0.5.

*With the reactor coolant system solid, no more than one charging pump shall be OPERABLE.

3/4.2 POWER DISTRIBUTION LIMITS

AXIAL FLUX DIFFERENCE (AFD)

LIMITING CONDITION FOR OPERATION

3.2.1 The indicated AXIAL FLUX DIFFERENCE (AFD) shall be maintained within a ±5% target band (flux difference units) about the target flux difference.

APPLICABILITY: MODE 1 ABOVE 50% RATED THERMAL POWER*

ACTION:

a. With the indicated AXIAL FLUX DIFFERENCE outside of the ± 5% target band about the target flux difference and with THERMAL POWER:

   1. Above 79% of RATED THERMAL POWER, within 15 minutes:

      a) Either restore the indicated AFD to within the target band limits, or

      b) Reduce THERMAL POWER to less than 79% of RATED THERMAL POWER.

   2. Between 50% and 79% of RATED THERMAL POWER:

      a) POWER OPERATION may continue provided:

         1) The indicated AFD has not been outside of the ± 5% target band for more than 1 hour penalty deviation cumulative during the previous 24 hours, and

         2) The indicated AFD is within the limits shown on Figure 3.2-1. Otherwise, reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes and reduce the Power Range Neutron Flux-High Trip Setpoints to ≤ 55% of RATED THERMAL POWER within the next 4 hours.

      b) Surveillance testing of the Power Range Neutron Flux Channels may be performed pursuant to Specification 4.3.1.1.1 provided the indicated AFD is maintained within the limits of Figure 3.2-1. A total of 16 hours of operation may be accumulated with the AFD outside of the target band during this testing without penalty deviation.

---

*See Special Test Exception 3.10.2.

LIMITING CONDITION FOR OPERATION (Continued)

b. THERMAL POWER shall not be increased above 79% of RATED THERMAL POWER unless the indicated AFD is within the ± 5% target band and ACTION 2.a.1, above has been satisfied.

c. THERMAL POWER shall not be increased above 50% of RATED THERMAL POWER unless the indicated AFD has not been outside of the ± 5% target band for more than 1 hour penalty deviation cumulative during the previous 24 hours.

SURVEILLANCE REQUIREMENTS

4.2.1.1 The indicated AXIAL FLUX DIFFERENCE shall be determined to be within its limits during POWER OPERATION above 15% of RATED THERMAL POWER by:

a. Monitoring the indicated AFD for each OPERABLE excore channel:

1. At least once per 7 days when the AFD Monitor Alarm is OPERABLE, and

2. At least once per hour for the first 24 hours after restoring the AFD Monitor Alarm to OPERABLE status.

b. Monitoring and logging the indicated AXIAL FLUX DIFFERENCE for each OPERABLE excore channel at least once per hour for the first 24 hours and at least once per 30 minutes thereafter, when the AXIAL FLUX DIFFERENCE Monitor Alarm is inoperable. The logged values of the indicated AXIAL FLUX DIFFERENCE shall be assumed to exist during the interval preceding each logging.

4.2.1.2 The indicated AFD shall be considered outside of its ± 5% target band when at least 2 of 4 or 2 of 3 OPERABLE excore channels are indicating the AFD to be outside the target band. Penalty deviation outside of the ± 5% target band shall be accumulated on a time basis of:

a. One minute penalty deviation for each one minute of POWER OPERATION outside of the target band at THERMAL POWER levels equal to or above 50% of RATED THERMAL POWER, and

b. One-half minute penalty deviation for each one minute of POWER OPERATION outside of the target band at THERMAL POWER levels between 15% and 50% of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.1.3 The target flux difference of each OPERABLE excore channel shall be determined by measurement at least once per 92 Effective Full Power Days with all part length control rods fully withdrawn. The provisions of Specification 4.0.4 are not applicable.

4.2.1.4 The target flux difference shall be updated at least once per 31 Effective Full Power Days by either determining the target flux difference pursuant to 4.2.1.3 above or by linear interpolation between the most recently measured value and 0 percent at the end of the cycle life. The provisions of Specification 4.0.4 are not applicable.

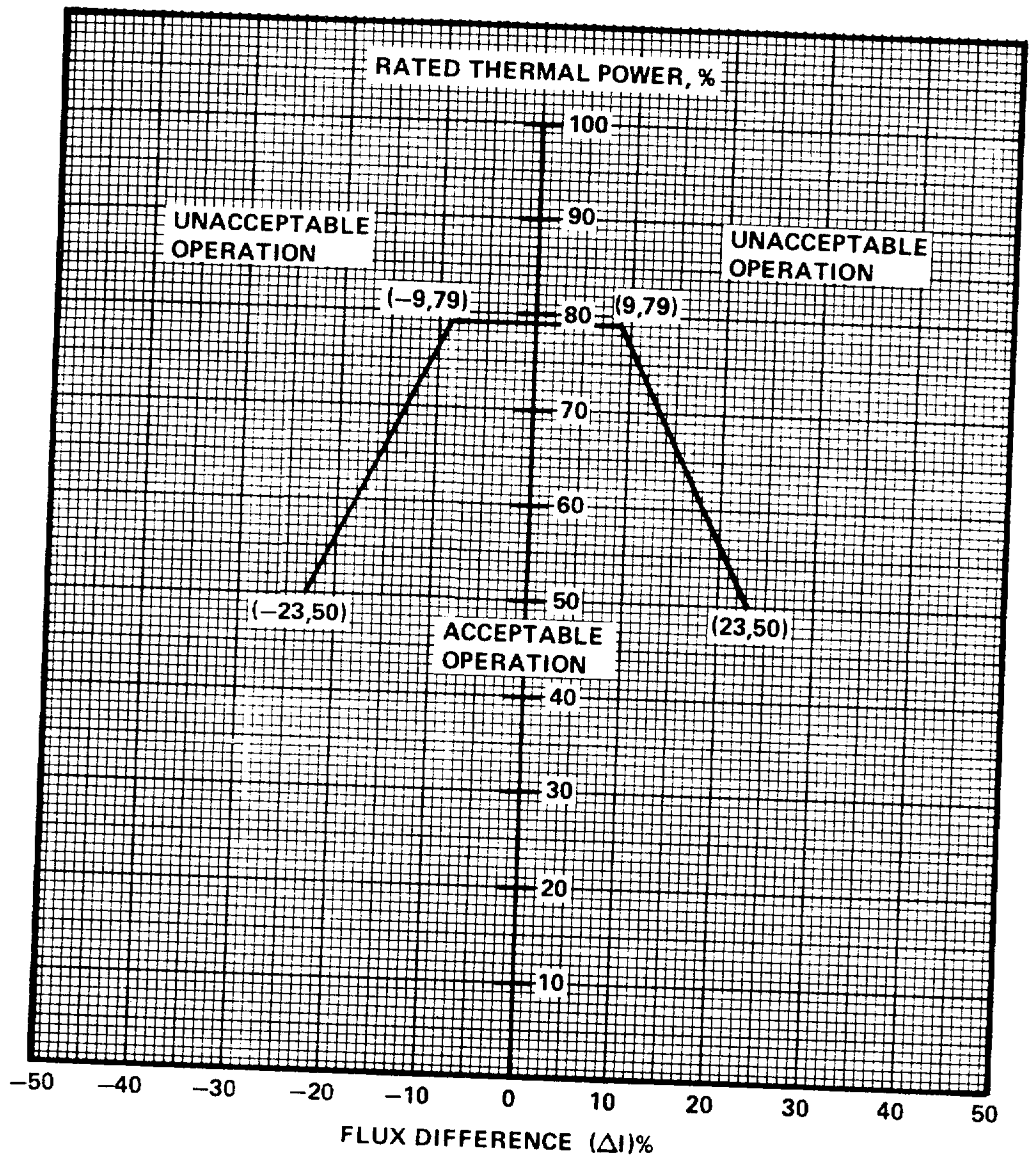

Figure 3.2–1 Axial Flux Difference Limits as a Function of Rated Thermal Power

POWER DISTRIBUTION LIMITS

HEAT FLUX HOT CHANNEL FACTOR-$F_Q(Z)$

LIMITING CONDITION FOR OPERATION

3.2.2 $F_Q(Z)$ shall be limited by the following relationships:

$$F_Q(Z) \leq \left[\frac{2.05}{P}\right] [K(Z)] \text{ for } P > 0.5$$

$$F_Q(Z) \leq [4.10] [K(Z)] \text{ for } P \leq 0.5$$

$$\text{where } P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$$

and K(Z) is the function obtained from Figure 3.2-2 for a given core height location.

APPLICABILITY: MODE 1

ACTION:

With $F_Q(Z)$ exceeding its limit:

a. Comply with either of the following ACTIONS:

1. Reduce THERMAL POWER at least 1% for each 1% $F_Q(Z)$ exceeds the limit within 15 minutes and similiarly reduce the Power Range Neutron Flux-High Trip Setpoints within the next 4 hours; POWER OPERATION may proceed for up to a total of 72 hours; subsequent POWER OPERATION may proceed provided the Overpower ΔT Trip Setpoints have been reduced at least 1% for each 1% $F_Q(Z)$ exceeds the limit. The Overpower ΔT Trip Setpoint reduction shall be performed with the reactor in at least HOT STANDBY.

2. Reduce THERMAL POWER as necessary to meet the limits of Specification 3.2.6 using the APDMS with the latest incore map and updated $\overline{R}$.

b. Identify and correct the cause of the out of limit condiiton prior to increasing THERMAL POWER above the reduced limit required by a, above; THERMAL POWER may then be increased provided $F_Q(Z)$ is demonstrated through incore mapping to be within its limit.

SURVEILLANCE REQUIREMENTS

4.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2 F_{xy} shall be evaluated to determine if $F_Q(Z)$ is within its limit by:

a. Using the movable incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER.

b. Increasing the measured F_{xy} component of the power distribution map by 3% to account for manufacturing tolerances and further increasing the value by 5% to account for measurement uncertainties.

c. Comparing the F_{xy} computed (F_{xy}^C) obtained in b, above to:

1. The F_{xy} limits for RATED THERMAL POWER (F_{xy}^{RTP}) for the appropriate measured core planes given in e and f, below, and

2. The relationship:

$$F_{xy}^L = F_{xy}^{RTP} [1 + 0.2(1-P)]$$

where F_{xy}^L is the limit for fractional THERMAL POWER operation expressed as a function of F_{xy}^{RTP} and P is the fraction of RATED THERMAL POWER at which F_{xy} was measured.

d. Remeasuring F_{xy} according to the following schedule:

1. When F_{xy}^C is greater than the F_{xy}^{RTP} limit for the appropriate measured core plane but less than the F_{xy}^L relationship, additional power distribution maps shall be taken and F_{xy}^C compared to F_{xy}^{RTP} and F_{xy}^L:

a) Either within 24 hours after exceeding by 20% of RATED THERMAL POWER or greater, the THERMAL POWER at which F_{xy}^C was last determined, or

SURVEILLANCE REQUIREMENTS (Continued)

b) At least once per 31 EFPD, whichever occurs first.

2. When the F_{xy}^{C} is less than or equal to the F_{xy}^{RTP} limit for the appropriate measured core plane, additional power distribution maps shall be taken and F_{xy}^{C} compared to F_{xy}^{RTP} and F_{xy}^{L} at least once per 31 EFPD.

e. The F_{xy} limits for RATED THERMAL POWER within specific core planes shall be:

1. $F_{xy}^{RTP} \leq 1.71$ for all core planes containing bank "D" control rods and/or any part length rods, and

2. $F_{xy}^{RTP} \leq 1.55$ for all unrodded core planes.

f. The F_{xy} limits of e, above, are not applicable in the following core plane regions as measured in percent of core height from the bottom of the fuel:

1. Lower core region from 0 to 15%, inclusive.

2. Upper core region from 85 to 100%, inclusive.

3. Grid plane regions at 17.8 $\pm$ 2%, 32.1 $\pm$ 2%, 46.4 $\pm$ 2%, 60.6 $\pm$ 2% and 74.9 $\pm$ 2%, inclusive (17 x 17 fuel elements).

4. Core plane regions within $\pm$ 2% of core height ($\pm$ 2.88 inches) about the bank demand position of the bank "D" or part length control rods.

g. With F_{xy}^{C} exceeding F_{xy}^{L} the effects of F_{xy} on $F_Q(Z)$ shall be evaluated to determine if $F_Q(Z)$ is within its limit.

4.2.2.3 When $F_Q(Z)$ is measured for other than F_{xy} determination, an overall measured $F_Q(Z)$ shall be obtained from a power distribution map and increased by 3% to account for manufacturing tolerances and further increased by 5% to account for measurement uncertainty.

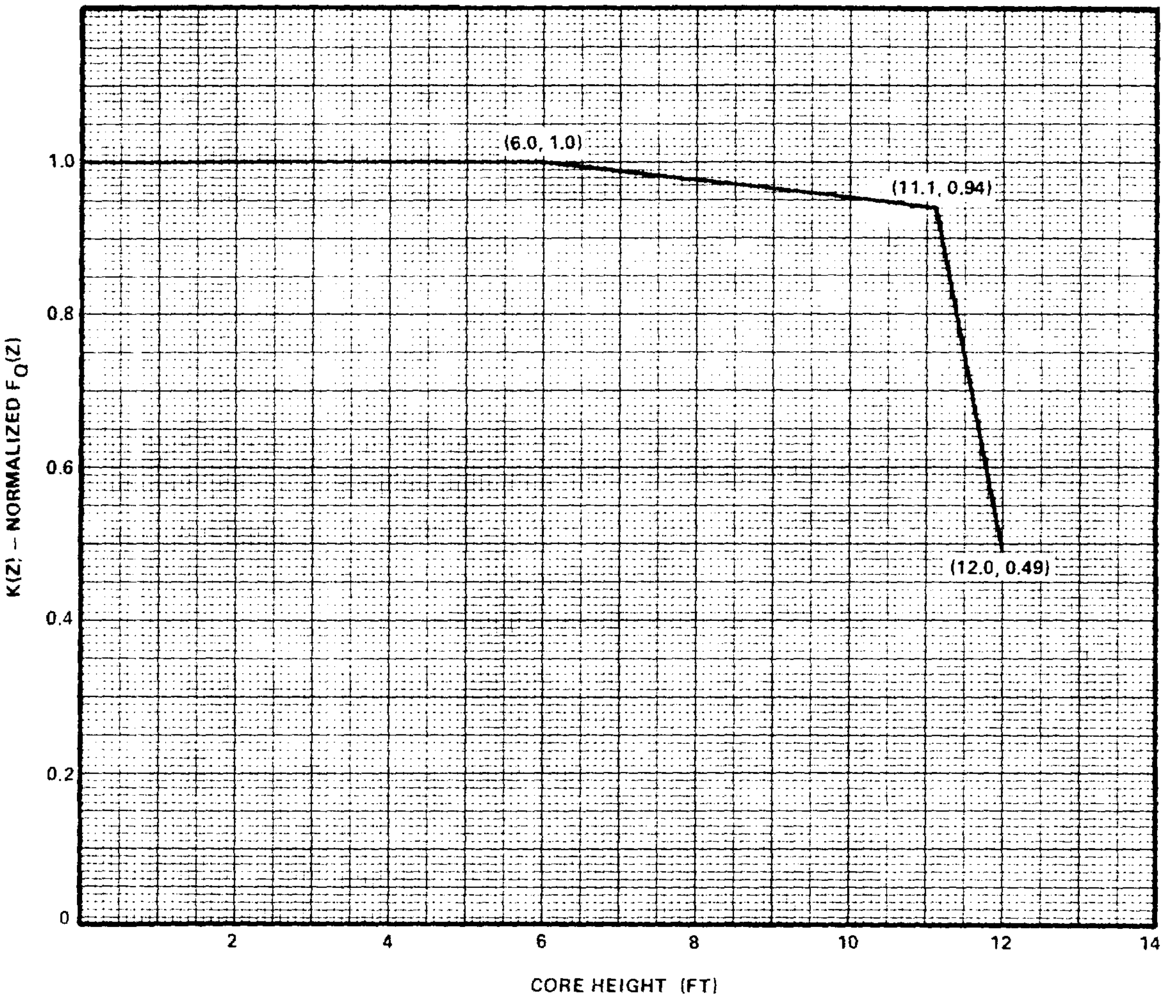

Figure 3.2–2 K(Z) – Normalized $F_Q(Z)$ as a Function of Core Height

TABLE 3.2-1

DNB PARAMETERS

PARAMETER	LIMITS: 3 Loops In Operation	LIMITS: 2 Loops In Operation** & Loop Stop Valves Open	LIMITS: 2 Loops In Operation** & Isolated Loop Stop Valves Closed
Reactor Coolant System T_{avg}	≤ 585°F		
Pressurizer Pressure	≥ 2205 psig*		
Reactor Coolant System Total Flow Rate	≥ 278,400 gpm		

*Limit not applicable during either a THERMAL POWER ramp increase in excess of 5% RATED THERMAL POWER per minute or a THERMAL POWER step increase in excess of 10% RATED THERMAL POWER.

**Values dependent on NRC approval of ECCS evaluation for these conditions

LIMITING CONDITION FOR OPERATION

3.2.6 The axial power distribution shall be limited by the following relationship:

$$[F_j(Z)]_S = \frac{[2.05]\ [K(Z)]}{(\bar{R}_j)(P_L)(1.03)(1 + \sigma_j)(1.07)}$$

Where:

a. $F_j(Z)$ is the normalized axial power distribution from thimble j at core elevation Z.

b. P_L is the fraction of RATED THERMAL POWER.

c. K(Z) is the function obtained from Figure 3.2-2 for a given core height location.

d. $\bar{R}_j$, for thimble j, is determined from at least n=6 in-core flux maps covering the full configuration of permissible rod patterns above 88% of RATED THERMAL POWER in accordance with:

$$\bar{R}_j = \frac{1}{n} \sum_{i=1}^{n} R_{ij}$$

Where:

$$R_{ij} = \frac{F_{Qi}^{Meas}}{[F_{ij}(Z)]_{Max}}$$

and $[F_{ij}(Z)]_{Max}$ is the maximum value of the normalized axial distribution at elevation Z from thimble j in map i which had a measured peaking factor without uncertainties or densification allowance of F_Q^{Meas}.

LIMITING CONDITION FOR OPERATION (Continued)

σ_j is the standard deviation associated with thimble j, expressed as a fraction or percentage of $\overline{R}_j$, and is derived from n flux maps from the relationship below, or 0.02, (2%) whichever is greater.

$$\sigma_j = \frac{\left[\frac{1}{n-1} \sum_{i=1}^{n} (\overline{R}_j - R_{ij})^2\right]^{1/2}}{\overline{R}_j}$$

The factor 1.07 is comprised of 1.02 and 1.05 to account for the axial power distribution instrumentation accuracy and the measurement uncertainty associated with F_Q using the movable detector system respectively.

The factor 1.03 is the engineering uncertainty factor.

APPLICABILITY: MODE 1 above 88% OF RATED THERMAL POWER#.

ACTION:

a. With a $F_j(Z)$ factor exceeding $[F_j(Z)]_S$ by $\leq$ 4 percent, reduce THERMAL POWER one percent for every percent by which the $F_j(Z)$ factor exceeds its limit within 15 minutes and within the next two hours either reduce the $F_j(Z)$ factor to within its limit or reduce THERMAL POWER to 88% or less of RATED THERMAL POWER.

b. With a $F_j(Z)$ factor exceeding $[F_j(Z)]_S$ by > 4 percent, reduce THERMAL POWER to 88% or less of RATED THERMAL POWER within 15 minutes.

The APDMS may be out of service when surveillance for determining power distribution maps is being performed.

SURVEILLANCE REQUIREMENTS

4.2.6.1 $F_j(Z)$ shall be determined to be within its limit by:

a. Either using the APDMS to monitor the thimbles required per Specification 3.3.3.6 at the following frequencies.

1. At least once per 8 hours, and

2. Immediately and at intervals of 10, 30, 60, 90, 120, 240 and 480 minutes following:

a) Increasing the THERMAL POWER above 88% of RATED THERMAL POWER, or

b) Movement of control bank "D" more than an accumulated total of 5 steps in any one direction.

b. Or using the movable incore detectors at the following frequencies when the APDMS is inoperable:

1. At least once per 8 hours, and

2. At intervals of 30, 60, 90, 120, 240 and 480 minutes following:

a) Increasing the THERMAL POWER above 88% of RATED THERMAL POWER, or

b) Movement of control bank "D" more than an accumulated total of 5 steps in any one direction.

4.2.6.2 When the movable incore detectors are used to monitor $F_j(Z)$, at least 2 thimbles shall be monitored and an $F_j(Z)$ accuracy equivalent to that obtained from the APDMS shall be maintained.

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
13. Loss of Flow - Two Loops	S	R	N.A.	1
14. Steam Generator Water Level--Low-Low	S	R	M	1, 2
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	M	1, 2
16. Undervoltage - Reactor Coolant Pump Busses	N.A.	R	N.A.	1
17. Underfrequency - Reactor Coolant Pump Busses	N.A.	R	N.A.	1
18. Turbine Trip				
A. Low Auto Stop Oil Pressure	N.A.	N.A.	S/U(1)	1, 2
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1, 2
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)	1, 2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2 and *
22. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2 and *

TABLE 4.3-1 (Continued)

NOTATION

* - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

(1) - If not performed in previous 7 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Adjust channel if absolute difference $\geq$ 3 percent.

(4) - Manual ESF functional input check every 18 months.

(5) - Each train tested every other month.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

TABLE 4.3-7

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Containment Pressure	M	R
2. Reactor Coolant Outlet Temperature-T_{hot} (wide range)	M	R
3. Reactor Coolant Inlet Temperature-T_{cold} (wide range)	M	R
4. Reactor Coolant Pressure-Wide Range	M	R
5. Pressurizer Water Level	M	R
6. Steam Line Pressure	M	R
7. Steam Generator Water Level-Narrow Range	M	R
8. Refueling Water Storage Tank Water Level	M	R
9. Boric Acid Tank Solution Level	M	R

FIRE DETECTION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.7 As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.3-11 shall be OPERABLE.

APPLICABILITY: Whenever equipment in that fire detection zone is required to be OPERABLE.

ACTION:

With one or more of the fire detection instrument(s) shown in Table 3.3-11 inoperable:

a. Within 1 hour establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, and

b. Restore the inoperable instrument(s) to OPERABLE status within 14 days or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the instrument(s) to OPERABLE status.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.7.1 Each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST.

4.3.3.7.2 The NFPA Code 72D Class A supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

4.3.3.7.3 The non-supervised circuits between the local panels in Specification 4.3.3.7.2 and the control room shall be demonstrated OPERABLE at least once per 31 days.

TABLE 3.3-11

FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION	MINIMUM DETECTORS REQUIRED HEAT	SMOKE
1. Reactor Coolant Pumps	1/pump*	
2. Control Room		
a. Under floor-loop 1	2	2
b. Under floor-loop 2	2	
c. Normal Air Supply		1
d. Emergency Air Supply		1
3. Cable Spreading Room	3	4
4. Primary Cable Vault and Tunnel	2	3
5. Service Building Cable Vault and Tunnel	5	4
6. Emergency Switchgear Room Emergency Air Supply		1
7. Station Battery Rooms		1/room
8. Diesel Generators	2/room	
9. Fuel Oil Pump House		
a. Room 1	1	1
b. Room 2	1	1
10. Motor Control Center		2
11. Auxiliary Building Charcoal Filters (Common with Unit 2)		
a. Intake Side	3/room	
b. Outlet Side	3/room	

*A RCP bearing or motor temperature may be substituted for an inoperable RCP heat detector provided the bearing or motor temperature(s) is monitored at least once per hour when the RCP is in operation.

AXIAL POWER DISTRIBUTION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.3.3.8 The axial power distribution monitoring system (APDMS) shall be OPERABLE with:

a. At least two detector thimbles available for which $\bar{R}$ has been determined from full incore flux maps. These two thimbles shall be those having the lowest uncertainty, σ, covering the full configuration of permissible rod patterns permitted at RATED THERMAL POWER.

b. At least two movable detectors, with associated devices and readout equipment, available for mapping $F_j(Z)$ in the above required thimbles.

APPLICABILITY: When the APDMS is used for monitoring the axial power distribution*#.

ACTION: With the APDMS inoperable, do not use the system for determining the Axial Power Distribution. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.8.1 The full incore flux maps used to determine $\bar{R}$ and for monitoring $F_j(Z)$ shall be updated at least once per 31 days. The continued accuracy and representativeness of the selected thimbles shall be verified by using their latest flux maps to update the $\bar{R}$ for each representative thimble. The original uncertainty, σ, shall not be updated, except as follows:

*Except as provided in Specification 4.2.6.1.b.
#The APDMS may be out of service when surveillance for determining power distribution maps is being performed.

SURVEILLANCE REQUIREMENTS (Continued)

a. If the absolute value of $\frac{R_{ij}-\overline{R}_j}{\overline{R}_j}$ is greater than $2\sigma_j$, another map shall be completed to verify the new $\overline{R}_j$. If the second map shows the first to be in error, the first map shall be disregarded. If the second map confirms the new $\overline{R}_j$, four more maps (including rodded configurations allowed by the insertion limits) will be completed so that a new $\overline{R}_j$ and σ_j can be defined from the six new maps.

4.3.3.8.2 The APDMS shall be demonstrated OPERABLE:

a. By performance of a CHANNEL FUNCTIONAL TEST within 7 days prior to its use and at least once per 31 days thereafter when used for monitoring $F_j(Z)$.

b. At least once per 18 months, during shutdown or below 5% of RATED THERMAL POWER, by performance of a CHANNEL CALIBRATION.

3/4.4.10 STRUCTURAL INTEGRITY

ASME CODE CLASS 1, 2 & 3 COMPONENTS

LIMITING CONDITION FOR OPERATION

3.4.10.1 The structural integrity of ASME Code Class 1, 2 and 3 components shall be maintained in accordance with Specification 4.4.10.1.

APPLICABILITY: ALL MODES.

ACTION:

a. With the structural integrity of any ASME Code Class 1 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature more than 50°F above the minimum temperature required by NDT considerations.

b. With the structural integrity of any ASME Code Class 2 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature above 200°F.

c. With the structural integrity of any ASME Code Class 3 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) from service.

d. The provisions of Specification 3.0.4 are not applicable.

SURVIELLANCE REQUIREMENTS

4.4.10.1 In addition to the requirements of Specification 4.0.5 the Reactor Coolant pump flywheels shall be inspected per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.

LIMITING CONDITION FOR OPERATION

3.4.10.2 The temperature of the steam generator supports shall be maintained:

a. > 225°F for A572 material monitored at a middle level corner during operation and at a top level corner during heatup of the supports.

b. < 355°F at the monitored top level corner.

c. > 85°F for A36 material monitored at a bottom level corner during heatup.

APPLICABILITY: With pressurizer pressure > 1000 psig.

ACTION: With the temperature of any steam generator support outside the above limits, restore the temperature to within the limit within 4 hours or be below 1000 psig within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.4.10.2.1 The steam generator support temperatures for A572 material shall be verified to be within the specified limits at least once per 12 hours.

4.4.10.2.2 The steam generator support temperatures for A36 material shall be verified to be within the specified limit prior to exceeding a pressurizer pressure of > 1000 psig.

4.4.10.2.3 In addition to the requirements of Specification 4.0.5, at least one third of the main member to main member welds, joining A572 material, in the steam generator supports, shall be visually examined during each 40 month inspection interval.

ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE low head safety injection pump,

c. An OPERABLE flow path capable of transferring fluid to the Reactor Coolant System when taking suction from the refueling water storage tank on a safety injection signal or from the containment sump when suction is transferred during the recirculation phase of operation or from the discharge of the outside recirculation spray pump.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumlated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
a. MOV-1890A	a. LHSI to hot leg	a. closed
b. MOV-1890B	b. LHSI to hot leg	b. closed
c. MOV-1836	c. Ch pump to cold leg	c. closed
d. MOV-1869A	d. Ch pump to hot leg	d. closed
e. MOV-1869B	e. Ch pump to hot leg	e. closed

b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2. Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

d. At least once per 18 months by:

1. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

e. At least once per 18 months, during shutdown, by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a safety injection test signal.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that each of the following pumps start automatically upon receipt of a safety injection test signal:

   a) Centrifugal charging pump, and

   b) Low head safety injection pump.

f. By verifying that each of the following pumps develop the indicated discharge pressure (after subtracting suction pressure) on recirculation flow when tested pursuant to Specification 4.0.5.

   1. Centrifugal charging pump $\geq$ 2410 psig.

   2. Low head safety injection pump $\geq$ 162 psig

g. At least once per 18 months, during reactor shutdown, verify that the following manual valves requiring adjustment to prevent pump "runout" and subsequent component damage are locked and tagged in the proper position for injection:

1.	1-SI-188	Loop A Cold Leg
2.	1-SI-191	Loop B Cold Leg
3.	1-SI-193	Loop C Cold Leg
4.	1-SI-203	Loop A Hot Leg
5.	1-SI-204	Loop B Hot Leg
6.	1-SI-205	Loop C Hot Leg

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE low head safety injection pump, and

c. An OPERABLE flow path capable of transferring fluid to the reactor coolant system when taking suction from the refueling water storage tank upon being manually realigned or from the containment sump when the suction is transferred during the recirculation phase of operation or from the discharge of the outside recirculation spray pump.

APPLICABILITY: MODE 4.

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

b. With no ECCS subsystem OPERABLE because of the inoperability of the low head safety injection pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods.

c. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.3 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

CONTAINMENT SYSTEMS

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.6.1.5 Primary containment average air temperature shall be maintained $\geq$ 86°F and $\leq$ 105°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment average air temperature > 105°F or < 86°F, restore the average air temperature to within the limit within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5.1 The primary containment average air temperature shall be the weighted average of at least the minimum number of temperatures at the following locations and shall be determined at least once per 24 hours:

Location			Weight Factor(WF)	Min. No. of Temperature
a.	Containment dome	Elev. ∿ 390	0.09604	1
b.	Inside crane wall	Elev. ∿ 329	0.04846	2
c.	Annulus	Elev. ∿ 329	0.02256	2
d.	Annulus	Elev. ∿ 238	0.04972	1
e.	Cubicles	Elev. ∿ 268	0.06785 (.07513)*	2

4.6.1.5.2 The average containment air temperature shall be determined by the following relationship:

$$T_{containment} = \frac{1.0}{\left[\sum_{i=1}^{n} \frac{W_{Fi}}{T_i} \right]} \text{ where}$$

WF_i is the weight factor for the temperature T_i, of the i^{th} temperature measurement.

*Weight factor to be used for pressurizer cubicle at Elev. 268.

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3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3.1 The containment isolation valves specified in Table 3.6-1 shall be OPERABLE with isolation times as shown in Table 3.6-1.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more of the isolation valve(s) specified in Table 3.6-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or

d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1.1 The isolation valves specified in Table 3.6-1 shall be demonstrated OPERABLE:

a. At least once per 92 days by cycling each weight or spring loaded check valve testable during plant operation, through one complete cycle of full travel and verifying that each check valve remains closed when the differential pressure in the direction of flow is $<$ 1.2 psid and opens when the differential pressure in the direction of flow is $\geq$ 1.2 psid but less than 5.0 psid.

SURVEILLANCE REQUIREMENTS (Continued)

b. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of the applicable cycling test, above, and verification of isolation time.

4.6.3.1.2 Each isolation valve specified in Table 3.6-1 shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 18 months by:

a. Verifying that on a Phase A containment isolation test signal, each Phase A isolation valve actuates to its isolation position.

b. Verifying that on a Phase B containment isolation test signal, each Phase B isolation valve actuates to its isolation position.

c. Verifying that on a Containment Purge and Exhaust isolation signal, each Purge and Exhaust valve actuates to its isolation position.

d. Cycling each weight or spring loaded check valve not testable during plant operation, through one complete cycle of full travel and verifying that each check valve remains closed when the differential pressure in the direction of flow is $<$ 1.2 psid and opens when the differential pressure in the direction of flow is $\geq$ 1.2 psid but less than 5.0 psid.

4.6.3.1.3 The isolation time of each power operated or automatic valve of Table 3.6-1 shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

3/4.7.3 COMPONENT COOLING WATER SUBSYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3.1 At least two component cooling water subsystems (shared with Unit 2) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one component cooling water subsystem OPERABLE, restore at least two subsystems to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.3.1 At least two component cooling water subsystems shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position.

3/4.7.4 SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4.1 At least two service water loops (shared with Unit 2) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one service water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.4.1 At least two service water loops shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. At least once per 6 months by measurement of the movement of the pumphouse and wing walls.

c. At least once per 6 months by measurement of the turbidity and suspended solids in the effluent from the drain system under the service water pump house. If either the turbidity or suspended solids content exceeds 10 ppm a Special Report shall be submitted to the Commission within 30 days outlining the causes and planned corrective action.

d. At least once per 18 months during shutdown, by:

   1. Verifying that each automatic valve servicing safety related equipment actuates to its correct position on a safety injection signal.

   2. Verifying that each containment isolation valve actuates to its correct position on a containment high-high signal.

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.5.1 The ultimate heat sinks shall be OPERABLE:

a. Service Water Reservoir with:

1. A minimum water level at or above elevation 313 Mean Sea Level, USGS datum, and

2. An average water temperature of $\leq$ 95°F as measured at the service water pump outlet.

b. The North Anna Reservoir with:

1. A minimum water level at or above elevation 244 Mean Sea Level, USGS datum, and

2. An average water temperature of $\leq$ 95°F as measured at the condenser inlet.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 6 hours and in COLD SHTUDOWN within the following 30 hours.

SURVEILLANCE REQUIRMENTS

4.7.5.1 The ultimate heat sinks shall be determined OPERABLE at least once per 24 hours by verifying the average water temperature and water level to be within their limits.

4.7.5.2 Data for calculating the leakage from the service water reservoir shall be obtained and recorded at least once per 6 months.

3/4.7.6 FLOOD PROTECTION

LIMITING CONDITION FOR OPERATION

3.7.6.1 Flood protection shall be provided for all safety related systems, components and structures when the water level of the North Anna Reservoir exceeds 256 feet Mean Sea Level USGS datum, at the main reservoir spillway.

APPLICABILITY: At all times.

ACTION:

With the water level at the main reservoir spillway above elevation 256 feet Mean Sea Level USGS datum:

a. Be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours, and

b. Initiate and complete within 36 hours, the following flood protection measures:

    1. Stop the circulating water pumps

    2. Close the condenser isolation valves

SURVEILLANCE REQUIREMENTS

4.7.6.1 The water level at the main reservoir spillway shall be determined to be within the limits by:

a. Measurement at least once per 24 hours when the water level is below elevation 255 feet Mean Sea Level USGS datum.

b. Measurement at least once per 2 hours when the water level is equal to or above 255 feet Mean Sea Level USGS datum.

PLANT SYSTEMS

RHR - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.7.9.2 As a minimum, one residual heat removal subsystem shall be OPERABLE.

APPLICABILITY: MODES 4 and 5.

ACTION:

With no Residual Heat Removal subsystem OPERABLE, immediately restore at least one RHR subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods. The provisions of Specifications 3.0.3, 3.0.4 and 4.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.9.2 Each Residual Heat Removal subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirement of Specification 4.7.9.1, and

a. At least once per 31 days by;

1. Cycling each testable, remote or automatically operated valve through at least one complete cycle, and
2. Verifying the correct position of each manual valve not locked sealed or otherwise secured in position, and
3. Verifying the correct position of each remote or automatically operated valve.

3/4.7.10 HYDRAULIC SNUBBERS

LIMITING CONDITION FOR OPERATION

3.7.10 All hydraulic snubbers listed in Table 3.7-4 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION:

With one or more hydraulic snubbers inoperable, restore the inoperable snubber(s) to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.10.1 Hydraulic snubbers shall be demonstrated OPERABLE by the performance of the following augmented inservice inspection program and the requirements of Specification 4.0.5.

4.7.10.2 Each hydraulic snubber with seal material fabricated from ethylene propylene or other materials demonstrated compatible with the operating environment and approved as such by the NRC, shall be determined OPERABLE at least once after not less than 4 months but within 6 months of initial criticality and in accordance with the inspection schedule of Table 4.7-3 thereafter, by a visual inspection of the snubber. Visual inspections of the snubbers shall include, but are not necessarily limited to, inspection of the hydraulic fluid reservoirs, fluid connections, and linkage connections to the piping and anchors. Initiation of the Table 4.7-3 inspection schedule shall be made assuming the unit was previously at the 6 month inspection interval.

4.7.10.3 Each hydraulic snubber with seal material not fabricated from ethylene propylene or other materials demonstrated compatible with the operating environment shall be determined OPERABLE at least once per 31 days by a visual inspection of the snubber. Visual inspections of the snubbers shall include, but are not necessarily limited to, inspection of the hydraulic fluid reservoirs, fluid connections, and linkage connections to the piping and anchors.

PLANT SYSTEMS

3/4.7.14 FIRE SUPPRESSION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.14.1 The fire suppression water system shall be OPERABLE with;

a. Two high pressure pumps, each with a capacity of 2500 gpm, with their discharge aligned to the fire suppression header,

b. Separate water supplies from the North Anna Reservoir and the Service Water Reservoir, and

c. An OPERABLE flow path capable of taking suction from the North Anna Reservoir and the Service Water Reservoir and transferring the water through distribution piping with OPERABLE sectionalizing control or isolation valves to the yard hydrant curb valves and the valve at each hose standpipe as required to be OPERABLE per Specification 3.7.14.5.

APPLICABILITY: At all times.

ACTION:

a. With one pipe and/or one water supply inoperable, restore the inoperable equipment to OPERABLE status within 7 days or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the plans and procedures to be used to provide the loss of redundacy in this system. The provisions of Specifications 3.0.3 an 3.0.4 are not applicable.

b. With the fire suppression water system otherwise inoperable:

1. Establish a backup fire suppression water system within 24 hours, and

2. Submit a Special Report in accordance with Specification 6.9.2;

a) By telephone within 24 hours,

b) Confirmed by telegraph, mailgram or facsimile transmission no later than the first working day following the event, and

LIMITING CONDITION FOR OPERATION (Continued)

c. In writing within 14 days following the event, outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.7.14.1.1 The fire suppression water system shall be demonstrated OPERABLE:

a. By verifying the contained water supply volumes pursuant to Specification 4.7.5.1.

b. At least once per 31 days on a STAGGERED TEST BASIS by starting each pump and operating it for at least 15 minutes on recirculation flow.

c. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path is in its correct position.

d. By performance of a system flush as necessary to maintain the system water chemistry within acceptable limits.

e. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.

f. At least once per 18 months by performing a system functional test which includes simulated automatic actuation of the system throughout its operating sequence, and:

1. Verifying that each automatic valve in the flow path actuates to its correct position,

2. Verifying that each pump develops at least 2500 gpm at a system head of $\geq$ 250 feet for 1-FP-P-1 and 187 feet for 1-FP-P-2.

3. Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel, and

4. Verifying that each high pressure pump starts (sequentially) to maintain the fire suppression water system pressure $\geq$ 80 psig in the main fire loop.

SURVEILLANCE REQUIREMENTS (Continued)

g. At least once per 3 years by performing a flow test of the system in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition, published by the National Fire Protection Association.

4.7.14.1.2 The fire pump diesel engine shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying;

1. The fuel storage tank contains at least 220 gallons of fuel, and

2. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscocity, water and sediment.

c. At least once per 18 months, during shutdown, by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service, and

2. Verifying the diesel starts from ambient conditions on the auto-start signal and operates for $\geq$ 20 minutes while loaded with the fire pump.

4.7.14.1.3 The fire pump diesel starting 24-volt battery bank and charger shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that:

1. The electrolyte level of each battery is above the plates, and

2. The overall battery voltage is $\geq$ 24 volts.

b. At least once per 92 days by verifying that the specific gravity is appropriate for continued service of the battery.

SURVEILLANCE REQUIREMENTS (Cont'd)

c. At least once per 18 months by verifying that:

   1. The batteries, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration, and

   2. The battery-to-battery and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.

LOW PRESSURE CO_2 SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.14.2 The following low pressure CO_2 systems shall be OPERABLE with a minimum of 10 and 5 tons in the storage tanks at a minimum pressure of 275 psig.

a. Cable tunnels and vaults
b. Charcoal filters
c. Emergency diesel generator rooms

APPLICABILITY: Whenever equipment in the low pressure CO_2 protected areas is required to be OPERABLE.

ACTION:

a. With one or more of the above required low pressure CO_2 systems inoperable, establish a continuous fire watch with backup fire suppression equipment for the unprotected area(s) within 1 hour; restore the system to OPERABLE status within 14 days or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuan to Specification 6.9.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.14.2 Each of the above required low pressure CO_2 systems shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying CO_2 storage tank level and pressure, and

b. At least once per 18 months by verifying:

   1. The system valves and associated ventilation dampers actuate manually and automatically, upon receipt of a simulated actuation signal, and

   2. Flow from each nozzle during a "Puff Test."

HIGH PRESSURE CO_2 SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.14.3 The following high pressure CO_2 systems shall be OPERABLE with the storage tanks having at least 90% of full charge weight.

a. Fuel oil pump rooms

APPLICABILITY: Whenever equipment in the high pressure CO_2 protected areas is required to be OPERABLE.

ACTION:

a. With one or more of the above required high pressure CO_2 systems inoperable, establish a continuous fire watch with backup fire suppression equipment for the unprotected area(s) within 1 hour; restore the system to OPERABLE status within 14 days or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuanto to Specification 6.9.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.14.3 Each of the above required high pressure CO_2 systems shall be demonstrated OPERABLE:

a. At least once per 6 months by verifying CO_2 storage tank weight.

b. At least once per 18 months by:

1. Verifying the system, including associated ventilation dampers, actuates manually and automatically, upon receipt of a simulated test signal, and

2. Performance of a flow test through headers and nozzles to assure no blockage.

HALON SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.14.4 The following Halon systems shall be OPERABLE with the storage tanks having at least 95% of full charge weight and 90% of full charge pressure.

a. Control Room

APPLICABILITY: Whenever equipment in the Halon protected areas is required to be OPERABLE.

ACTION:

a. With one or more of the above required Halon systems inoperable, establish a continuous fire watch with backup fire suppression equipment for the unprotected area(s) within 1 hour; restore the sysatem to OPERABLE status within 14 days or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.14.4 Each of the above required Halon systems shall be demonstrated OPERABLE:

a. At least once per 6 months by verifying Halon storage tank weight and pressure.

b. At least once per 18 months by:

   1. Verifying the system, including associated ventilation dampers, actuates manually and automatically, upon receipt of a simulated test signal, and

   2. Performance of a flow test through headers and nozzles to assure no blockage.

FIRE HOSE STATIONS

LIMITING CONDITIONS FOR OPERATION

3.7.14.5. The fire hose stations shown in Table 3.7-7 shall be OPERABLE.

APPLICABILITY: Whenever equipment in the areas protected by the fire hose stations is required to be OPERABLE.

ACTION:

a. With one or more of the fire hose stations shown in Table 3.7-7 inoperable, route an additional equivalent capacity fire hose to the unprotected area(s) from an OPERABLE hose station within 1 hour.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.14.5 Each of the fire hose stations shown in Table 3.7-7 shall be demonstrated OPERABLE:

a. At least once per 31 days by visual inspection of the station to assure all required equipment is at the station.

b. At least once per 18 months by:

    1. Removing the hose for inspection and re-racking, and

    2. Replacement of all degraded gaskets in couplings.

c. At least once per 3 years by:

    1. Partially opening each hose station valve to verify valve OPERABILITY and no flow blockage.

    2. Conducting a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at that hose station.

TABLE 3.7-7

FIRE HOSE STATIONS

HOSE RACK IDENTIFICATION

AB-H-1
AB-H-4
AB-H-6

AB-H-8
AB-H-12
AB-H-13
AB-H-15
AB-H-18A
AB-H-19
AB-H-22
AB-H-24
AB-H-27
AB-H-29
AB-H-30
AB-H-32

F-H-1
F-H-3
T-H-7
T-H-25
T-H-21
T-H-22D
T-H-33
T-H-34
HP-H-5
BLR-H-2

3/4.7.15 PENETRATION FIRE BARRIERS

LIMITING CONDITIONS FOR OPERATION

3.7.15 All penetration fire barriers protecting safety related areas shall be functional.

APPLICABILITY: At all times.

ACTION:

a. With one or more of the above required penetration fire barriers non-functional, establish a continuous fire watch on at least one side of the affected penetration within 1 hour.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.15 Each of the above required penetration fire barriers shall be verified to be functional by a visual inspection:

a. At least once per 18 months, and

b. Prior to declaring a penetration fire barrier functional following repairs or maintenance.

3/4.2 POWER DISTRIBUTION LIMITS

BASES

The specifications of this section provide assurance of fuel integrity during Condition I (Normal Operation) and II (Incidents of Moderate Frequency) events by: (a) maintaining the minimum DNBR in the core $\geq$ 1.30 during normal operation and in short term transients, and (b) limiting the fission gas release, fuel pellet temperature & cladding mechanical properties to within assumed design criteria. In addition, limiting the peak linear power density during Condition I events provides assurance that the initial conditions assumed for the LOCA analyses are met and the ECCS acceptance criteria limit of 2200°F is not exceeded.

The definitions of certain hot channel and peaking factors as used in these specifications are as follows:

$F_Q(Z)$ Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod at core elevation Z divided by the average fuel rod heat flux, allowing for manufacturing tolerances on fuel pellets and rods.

$F^N_{\Delta H}$ Nuclear Enthalpy Rise Hot Channel Factor, is defined as the ratio of the integral of linear power along the rod with the highest integrated power to the average rod power.

$F_{xy}(Z)$ Radial Peaking Factor, is defined as the ratio of peak power density to average power density in the horizontal plane at core elevation Z.

3/4.2.1 AXIAL FLUX DIFFERENCE (AFD)

The limits on AXIAL FLUX DIFFERENCE assure that the $F_Q(Z)$ upper bound envelope of 2.05 times the normalized axial peaking factor is not exceeded during either normal operation or in the event of xenon redistribution following power changes.

Target flux difference is determined at equilibrium xenon conditions with the part length control rods withdrawn from the core. The full length rods may be positioned within the core in accordance with their respective insertion limits and should be inserted near their normal position for steady state operation at high power levels. The value of the target flux difference obtained under these conditions divided by the fraction of RATED THERMAL POWER is the target flux difference at RATED THERMAL POWER for the associated core burnup conditions. Target flux differences for other THERMAL POWER levels are obtained by multiplying the RATED THERMAL POWER value by the appropriate fractional THERMAL POWER level. The periodic updating of the target flux difference value is necessary to reflect core burnup considerations.

BASES

Although it is intended that the plant will be operated with the AXIAL FLUX DIFFERENCE within the $\pm$ 5% target band about the target flux difference, during rapid plant THERMAL POWER reductions, control rod motion will cause the AFD to deviate outside of the target band at reduced THERMAL POWER levels. This deviation will not affect the xenon redistribution sufficiently to change the envelope of peaking factors which may be reached on a subsequent return to RATED THERMAL POWER (with the AFD within the target band) provided the time duration of the deviation is limited. Accordingly, a 1 hour penalty deviation limit cumulative during the previous 24 hours is provided for operation outside of the target band but within the limits of Figure 3.2-1 while at THERMAL POWER levels between 50% and 79% of RATED THERMAL POWER. For THERMAL POWER levels between 15% and 50% of rated THERMAL POWER, deviations of the AFD outside of the target band are less significant. The penalty of 2 hours actual time reflects this reduced significance.

Provisions for monitoring the AFD on an automatic basis are derived from the plant process computer through the AFD Monitor Alarm. The computer determines the one minute average of each of the OPERABLE excore detector outputs and provides an alarm message immediately if the AFD for at least 2 of 4 or 2 of 3 OPERABLE excore channels are outside the target band and the THERMAL POWER is greater than 79% of RATED THERMAL POWER. During operation at THERMAL POWER levels between 50% and 79% and 15% and 50% RATED THERMAL POWER, the computer outputs an alarm message when the penalty deviation accumulates beyond the limits of 1 hour and 2 hours, respectively.

Figure B 3/4 2-1 shows a typical monthly target band.

a. abnormal perturbations in the radial power shape, such as from rod misalignment, effect $F^N_{\Delta H}$ more directly than F_Q,

b. although rod movement has a direct influence upon limiting F_Q to within its limit, such control is not readily available to limit $F^N_{\Delta H}$, and

c. errors in prediction for control power shape detected during startup physics tests can be compensated for in F_Q by restricting axial flux distributions. This compensation for $F^N_{\Delta H}$ is less readily available.

3/4.2.4 QUADRANT POWER TILT RATIO

The quadrant power tilt ratio limit assures that the radial power distribution satisfies the design values used in the power capability analysis. Radial power distribution measurements are made during start-up testing and periodically during power operation.

The limit of 1.02 at which corrective action is required provides DNB and linear heat generation rate protection with x-y plane power tilts.

The two hour time allowance for operation with a tilt condition greater than 1.02 but less than 1.09 is provided to allow identification and correction of a dropped or misaligned rod. In the event such action does not correct the tilt, the margin for uncertainty on F_Q is reinstated by reducing the power by 3 percent for each percent of tilt in excess of 1.0.

3/4.2.5 DNB PARAMETERS

The limits on the DNB related parameters assure that each of the parameters are maintained within the normal steady state envelope of operation assumed in the transient and accident analyses. The limits are consistent with the initial FSAR assumptions and have been analytically demonstrated adequate to maintain a minimum DNBR of 1.30 throughout each analyzed transient.

The 12 hour periodic surveillance of these parameters thru instrument readout is sufficient to ensure that the parameters are restored within their limits following load changes and other expected transient operation. The 18 month periodic measurement of the RCS total flow rate is adequate to detect flow degradation and ensure correlation of the flow indication channels with measured flow such that the indicated percent flow will provide sufficient verification of flow rate on a 12 hour basis.

3/4.2.6 AXIAL POWER DISTRIBUTION

The limit on axial power distribution ensures that F_Q will be controlled and monitored on a more exact basis through use of the APDMS when operating above 88% of RATED THERMAL POWER. This additional limitation on F_Q is necessary in order to provide assurance that peak clad temperatures will remain below the ECCS acceptance criteria limit of 2200°F in the event of a LOCA.

3/4.3.3.6 POST-ACCIDENT INSTRUMENTATION

The OPERABILITY of the post-accident instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables following an accident.

3/4.3.3.7 FIRE DETECTION INSTRUMENTATION

OPERABILITY of the fire detection instrumentation ensures that adequate warning capability is available for the prompt detection of fires. This capability is required in order to detect and locate fires in their early stages. Prompt detection of fires will reduce the potential for damage to safety related equipment and is an integral element in the overall facility fire protection program.

In the event that a portion of the fire detection instrumentation is inoperable, the establishment of frequent fire patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to OPERABILITY.

3/4.3.3.8 AXIAL POWER DISTRIBUTION MONITIORING SYSTEM (APDMS)

OPERABILITY of the APDMS ensures that sufficient capability is available for the measurement of the neutron flux spatial distribution within the reactor core. This capability is required to 1) monitor the core flux patterns that are representative of the peak core power density and 2) limit the core average axial power profile such that the total power peaking factor F_Q is maintained within acceptable limits.

3/4.7.13 GROUNDWATER LEVEL-SERVICE WATER RESERVOIR

A program to monitor groundwater levels in the area of the service water reservoir has been established to ensure that the integrity of the service water reservoir embankments and pumphouse is maintained.

Groundwater threshold levels have been established based on historical groundwater data available in 1977. These levels are sufficiently conservative to ensure that the service water reservoir and pumphouse will perform their intended function. An engineering evaluation will be performed if these threshold values are exceeded, to determine if there is any substantive cause to believe that any aspect of the service water reservoir, dike or pumphouse will not perform its intended function. A conclusion to this effect, and the appropriate corrective actions to be performed, will be reported to the Commission.

The groundwater threshold levels are periodically reviewed to determine whether a changing groundwater environment warrants a change in threshold levels.

3/4.7.14 FIRE SUPPRESSION SYSTEMS

The OPERABILITY of the fire suppression systems ensures that adequate fire suppression capability is available to confine and extinquish fires occuring in any portion of the facility where safety related equipment is located. The fire suppression system consists of the water system, CO_2, Halon and fire hose stations. The collective capability of the fire suppression systems is adequate to minimize potential damage to safety related equipment and is a major element in the facility fire protection program.

In the event that portions of the fire suppression systems are inoperable, alternate backup fire fighting equipment is required to be made available in the affected areas until the inoperable equipment is restored to service.

In the event the fire suppression water system becomes inoperable, immediate corrective measures must be taken since this system provides the major fire suppression capability of the plant. The requirement for a twenty-four hour report to the Commission provides for prompt evaluation of the acceptability of the corrective measures to provide adequate fire suppression capability for the continued protection of the nuclear plant.

3/4.7.15 PENETRATION FIRE BARRIERS

The functional integrity of the penetration fire barriers ensures that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. This design feature minimizes the possibility of a single fire rapidly involving several areas of the facility prior to detection and extinguishment. The penetration fire barriers are a passive element in the facility fire protection program and are subject to periodic inspections.

During periods of time when the barriers are not functional, a continuous fire watch is required to be maintained in the vicinity of the affected barrier until the barrier is restored to functional status.

6.0 ADMINISTRATIVE CONTROLS

6.1 RESPONSIBILITY

6.1.1 The Station Manager shall be responsible for overall facility operation and shall delegate in writing the succession to this responsibility during his absence.

6.2 ORGANIZATION

OFFSITE

6.2.1 The offsite organization for facility management and technical support shall be as shown on Figure 6.2-1.

FACILITY STAFF

6.2.2 The Facility organization shall be as shown on Figure 6.2-2 and:

a. Each on duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.2-1.

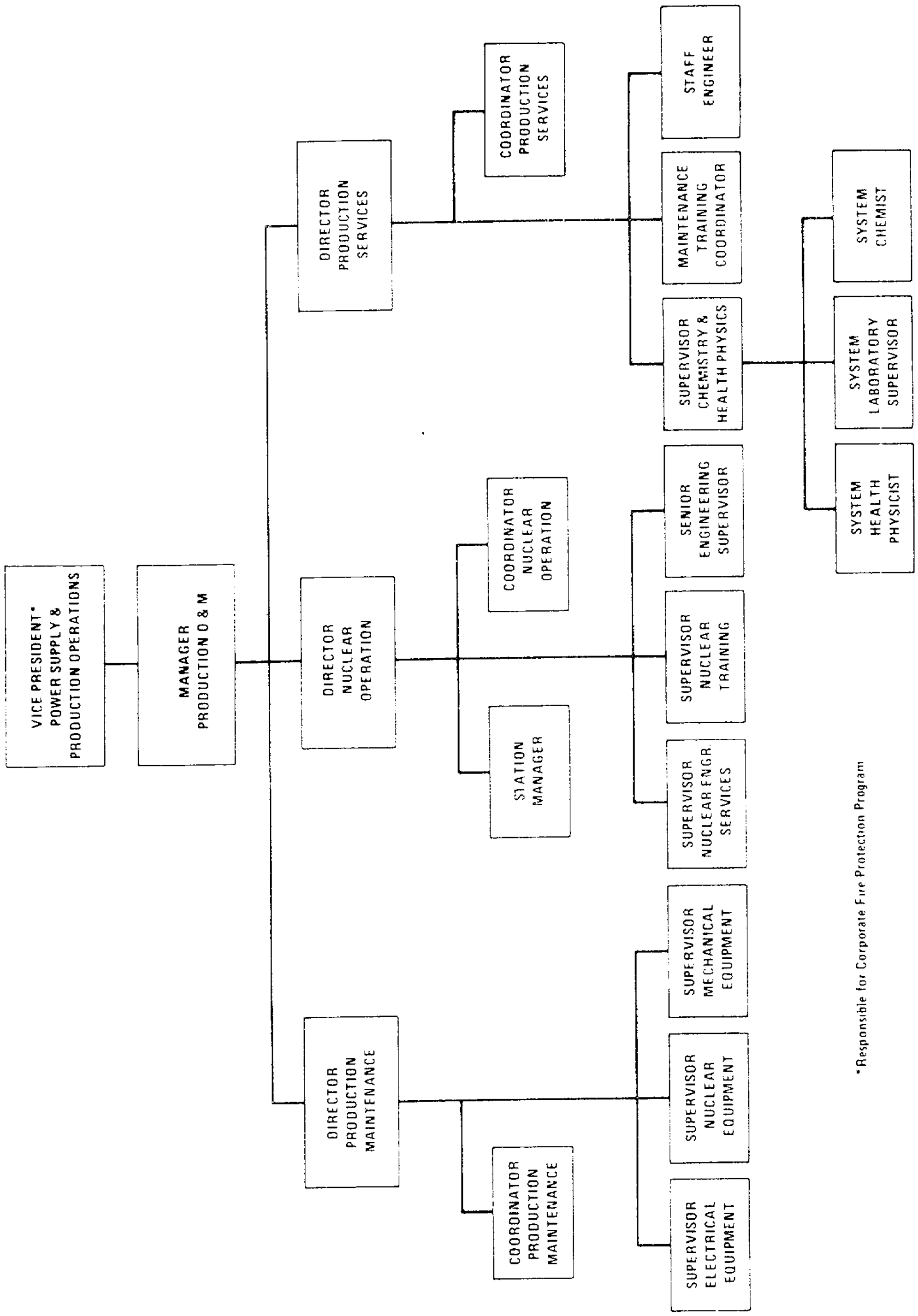
b. At least one licensed Operator shall be in the control room when fuel is in the reactor.

c. At least two licensed Operators shall be present in the control room during reactor start-up, scheduled reactor shutdown and during recovery from reactor trips.

d. An individual qualified in radiation protection procedures shall be on site when fuel is in the reactor.

e. All CORE ALTERATIONS shall be directly supervised by either a licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.

f. A Fire Brigade of at least 5 members shall be maintained onsite at all times. The Fire Brigade shall not include the minimum shift crew shown in Table 6.2-1 or any personnel required for other essential functions during a fire emergency.



*Responsible for Corporate Fire Protection Program

Figure 6.2-1 Offsite Organization for Facility Management and Technical Support

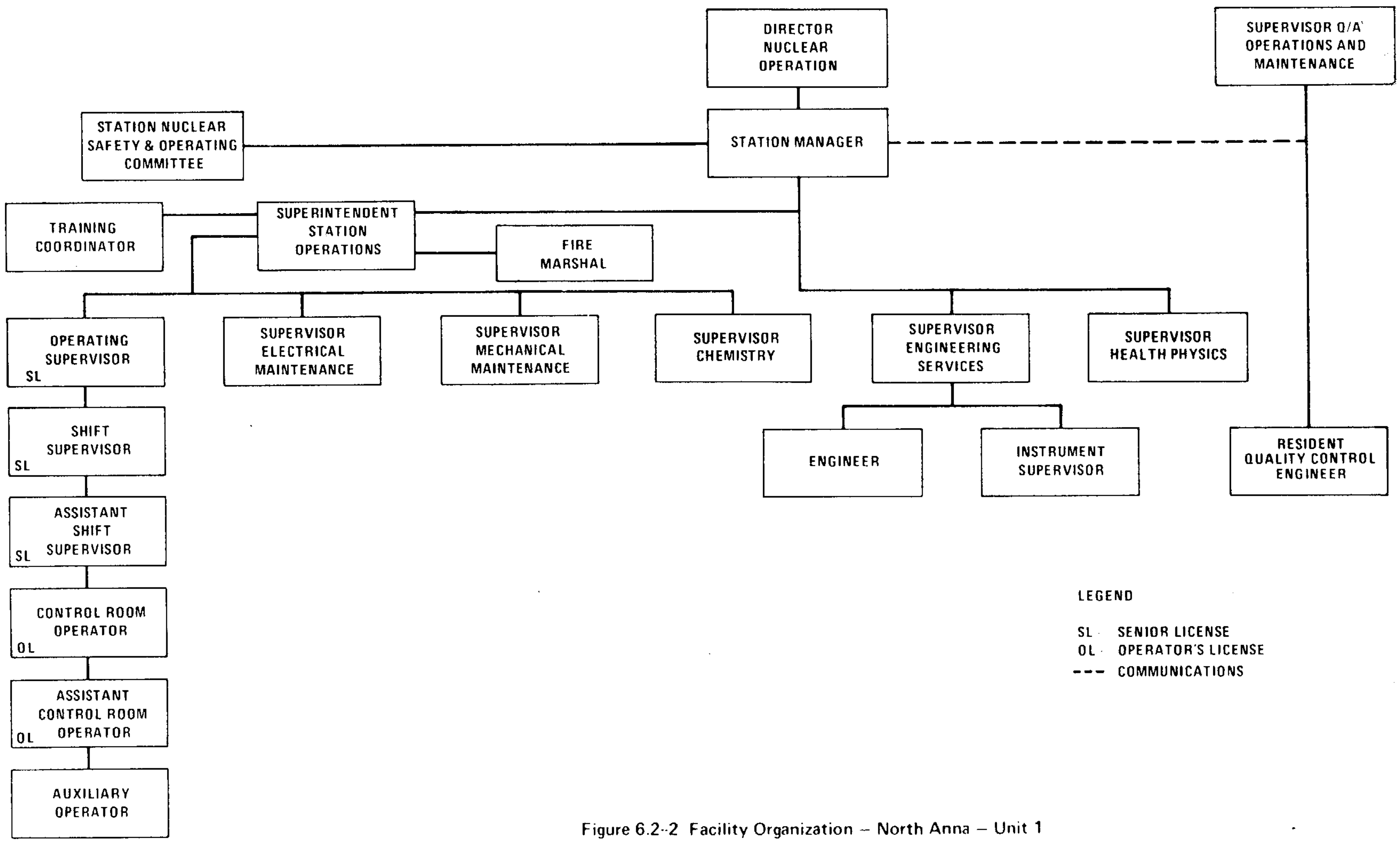


Figure 6.2-2 Facility Organization – North Anna – Unit 1

TABLE 6.2-1

MINIMUM SHIFT CREW COMPOSITION#

	APPLICABLE MODES	
LICENSE CATEGORY	1, 2, 3 & 4	5 & 6
SOL	1	1*
OL	2	1
Non-Licensed	2	1

*Does not include the licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling, supervising CORE ALTERATIONS.

#Shift crew composition (including an individual qualified in radiation protection procedures) may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Table 6.2-1.

6.3 FACILITY STAFF QUALIFICATIONS

6.3.1 Each member of the facility staff shall meet or exceed the minimum qualifications of ANSI N18.1-1971 for comparable positions, except for the Supervisor-Health Physics who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975.

6.4 TRAINING

6.4.1 A retraining and replacement training program for the facility staff shall be maintained under the direction of the Superintendent - Station Operations and shall meet or exceed the requirements and recommendations of Section 5.5 of ANSI N18.1-1971 and Appendix "A" of 10 CFR Part 55.

6.4.2 A training program for the Fire Brigade shall be maintained under the direction of the Fire Marshal and shall meet or exceed the requirements of Section 27 of the NFPA Code-1976.

6.5 REVIEW AND AUDIT

6.5.1 STATION NUCLEAR SAFETY AND OPERATING COMMITTEE (SNSOC)

FUNCTION

6.5.1.1 The SNSOC shall function to advise the Station Manager on all matters related to nuclear safety.

COMPOSITION

6.5.1.2 The SNSOC shall be composed of the:

Chairman:	Station Manager
Vice-Chairman:	Superintendent - Station Operations
Member:	Operating Supervisor
Member:	Supervisor - Engineering Services
Member:	Supervisor - Electrical Maintenance
Member:	Instrument Supervisor
Member:	Supervisor - Mechanical Maintenance
Member:	Supervisor - Chemistry
Member:	Supervisor - Health Physics

ALTERNATES

6.5.1.3 All alternate members shall be appointed in writing by the SNSOC Chairman to serve on a temporary basis; however, no more than two alternates shall participate as voting members in SNSOC activities at any one time.

MEETING FREQUENCY

6.5.1.4 The SNSOC shall meet at least once per calendar month and as convened by the SNSOC Chairman or his designated alternate.

QUORUM

6.5.1.5 A quorum of the SNSOC shall consist of the Chairman or Vice-Chairman and four members including alternates.

RESPONSIBILITIES

6.5.1.6 The SNSOC shall be responsible for:

a. Review of 1) all procedures required by Specification 6.8.1 and changes thereto, 2) any other proposed procedures or changes thereto as determined by the Station Manager to affect nuclear safety.

b. Review of all proposed tests and experiments that affect nuclear safety.

c. Review of all proposed changes to Appendix "A" Technical Specifications.

d. Review of all proposed changes or modifications to plant systems or equipment that affect nuclear safety.

e. Investigation of all violations of the Technical Specifications including the preparation and forwarding of reports covering evaluation and recommendations to prevent recurrence to the Director, Nuclear Operations and to the Chairman of the System Nuclear Safety and Operating Committee.

f. Review of events requiring 24 hour written notification to the Commission.

g. Review of facility operations to detect potential nuclear safety hazards.

g. Any other area of facility operation considered appropriate by the SyNSOC or the Vice President-Power Supply and Production Operations.

h. The Station Fire Protection Program and implementing procedures at least once per 24 months.

i. An independent fire protection and loss prevention program inspection and audit shall be performed at least once per 12 months utilizing either qualified offsite licensee personnel or an outside fire protection firm.

j. An inspection and audit of the fire protection and loss prevention program shall be performed by a qualified outside fire consultant at least once per 36 months.

RECORDS

6.5.2.10 Records of SyNSOC activities shall be prepared, maintained and dissesminated as indicated below within 14 working days of each meeting or following completion of the review or audit.

1. Senior Vice President-Power
2. Vice President-Power Supply and Production Operations
3. Nuclear Power Station Managers
4. Director Nuclear Operations
5. Members of the SyNSOC
6. Others that the Chairman of the SyNSOC may designate.

6.6 REPORTABLE OCCURRENCE ACTION

6.6.1 The following actions shall be taken for REPORTABLE OCCURRENCES:

a. The Commission shall be notified and/or a report submitted pursuant to the requirements of Specification 6.9.

b. Each REPORTABLE OCCURRENCE requiring 24 hour notification to the Commission shall be reviewed by the SNSOC and submitted to the SyNSOC and the Director of Nuclear Operations.

6.7 SAFETY LIMIT VIOLATION

6.7.1 The following actions shall be taken in the event a Safety Limit is violated:

a. The facility shall be placed in at least HOT STANDBY within one hour.

b. The Safety Limit violation shall be reported to the Commission, the Director, Nuclear Operations and to the SyNSOC within 24 hours.

c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the SNSOC. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

d. The Safety Limit Violation Report shall be submitted to the Commission, the SyNSOC and the Director, Nuclear Operations within 14 days of the violation.

6.8 PROCEDURES

6.8.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, November, 1972.

b. Refueling operations.

c. Surveillance and test activities of safety related equipment.

d. Security Plan implementation.

e. Emergency Plan implementation.

f. Fire Protection Program Implementation.

6.8.2 Each procedure of 6.8.1 above, and changes thereto, shall be reviewed by the SNSOC and approved by the Station Manager prior to implementation and reviewed periodically as set forth in administrative procedures.

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MONTHLY OPERATING REPORT

6.9.1.6 Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis to the Director, Office of Management Information and Program Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the Regional Office, submitted no later than the 15th of each month following the calendar month covered by the report.

REPORTABLE OCCURRENCES

6.9.1.7 The REPORTABLE OCCURRENCES of Specifications 6.9.1.8 and 6.9.1.9 below, including corrective actions and measures to prevent recurrence, shall be reported to the NRC. Supplemental reports may be required to fully describe final resolution of occurrence. In case of corrected or supplemental reports, a licensee event report shall be completed and reference shall be made to the original report date.

PROMPT NOTIFICATION WITH WRITTEN FOLLOWUP

6.9.1.8 The types of events listed below shall be reported within 24 hours by telephone and confirmed by telegraph, mailgram, or facsimile transmission to the Director of the Regional Office, or his designate no later than the first working day following the event, with a written followup report within 14 days. The written followup report shall include, as a minimum, a completed copy of a licensee event report form. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

a. Failure of the reactor protection system or other systems subject to limiting safety-system settings to initiate the required protective function by the time a monitored parameter reaches the setpoint specified as the limiting safety-system setting in the technical specifications or failure to complete the required protective function.

b. ECCS Actuation shall be reported within 90 days of the occurrence. The report shall describe the circumstances of the actuation and the total accumulated cycles to date. Specification 3.5.2 and 3.5.3.

c. With Seismic Monitoring Instrumentation inoperable for more that 30 days, submit a special report within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrumentation to operable status. Specification 3.3.3.3.

d. For all seismic events actuating a seismic monitoring instrument, submit a special report within 10 days describing the magnitude, frequency spectrum and resultant effects upon features important to safety. Specification 4.3.3.3.2.

e. With Meteorological Instrumentation inoperable for more than 7 days, submit a special report within the next 10 days, outlining the cause of the malfunction and the plans for restoring the instrumentation to operable status. Specification 3.3.3.4.

f. With the primary coolant specific activity > 1.0 μCi/gram DOSE EQUIVALENT 1-131 or > $100/\bar{E}$ μCi/gram, a specific activity analysis shall be included in the REPORTABLE OCCCURRENCE report required pursuant to Specification 6.9.1.7. The information requested in Specification 3.4.8 shall also be included in that report.

g. With sealed source or fission detector leakage tests revealing the presence of ≥ 0.005 microcuries of removable contamination submit a special report on an annual basis outlining the corrective actions taken to prevent the spread of contamination. Specification 4.7.11.1.3.

h. With the MTC more positive than 0 Δk/k/°F submit a special report within the next 10 days describing the value of the measured MTC, the interim control rod withdrawal limits and the predicted average core burnup necessary for restoring the positive MTC to within its limit for the all rods withdrawn condition. Specification 3.1.1.4.

i. For any abnormal degradation of the structural integrity of the reactor vessel or the Reactor Coolant System pressure boundary detected during the performance of Specification 4.4.10, an initial report shall be submitted within 10 days after detection and a detailed report submitted within 90 days after the completion of Specification 4.4.10.

j. For any abnormal degradation of the containment structure detected during the performance of Specification 4.6.1.6, an initial report shall be submitted within 10 days after completion of Specification 4.6.1.6. A final report, which includes (1) a description of the condition of the liner plate and concrete, (2) inspection procedure, (3) the tolerance on cracking and (4) the corrective actions taken, shall be submitted within 90 days after the completion of Specification 4.6.1.6.

k. Inoperable Fire Detection Instrumentation, Specification 3.3.3.7.

l. Inoperable Fire Suppression Systems, Specifications 3.7.14.1, 3.7.14.2, 3.7.14.3, 3.7.14.4 and 3.7.14.5.

6.10 RECORD RETENTION

6.10.1 The following records shall be retained for at least five years:

a. Records and logs of facility operation covering time interval at each power level.

b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.

c. Each REPORTABLE OCCURRENCE submitted to the Commission.

d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.

e. Records of changes made to Operating Procedures.

f. Records of radioactive shipments.

g. Records of sealed source leak tests and results.

h. Records of annual physical inventory of all sealed source material of record.

6.10.2 The following records shall be retained for the duration of the Facility Operating License:

ATTACHMENT TO NPF-4 AMENDMENT NO. 3

PAGE CHANGES TO TECHNICAL SPECIFICATIONS

APPENDIX B

(6) The amount of iodine-131 released during any period of 12 consecutive months shall not exceed 4 Ci/reactor.

c. Should any of the conditions of 2.2.3.c(1), (2) or (3) listed below exist, the licensee shall make an investigation to identify the causes of the release rates, define and initiate a program of action to reduce the release rates to design objective levels listed in Section 2.2. A written report of these actions shall be submitted to the NRC within 30 days from the end of the quarter during 3
which the release occurred.

(1) If the average release rate of noble gases from the site during any calendar quarter is such that

$$50[Q_{Tv}\overline{N}_v]>1$$

or

$$25[Q_{Tv}\overline{M}_v]>1$$

(2) If the average release rate per site of all radionuclides and radioactive materials in particulate form with half-lives greater than eight days during any calendar quarter is such that

$$50[4.1 \times 10^5\ Q_v]>1$$

(3) If the amount of iodine-131 released during any calendar quarter is greater than 0.5 Ci/reactor.

d. During the release of gaseous wastes from the waste gas decay tank the process vent monitor (as listed in Table 2.2-4) shall be operating and set to alarm and to initiate automatically the closure of the waste gas discharge valve prior to exceeding the limits specified in 2.2.3.a above. The operability of each automatic isolation valve shall be demonstrated at least at least quarterly.

e. The maximum activity to be contained in one waste gas storage tank shall not exceed 25,000 curies (considered as Xe-133).

f. An unplanned or uncontrolled offsite release of radioactive materials in gaseous effluents in excess of 150 curies of noble gas or 0.05 curie of radioiodine in gaseous form requires notification. This notification shall be in accordance with Specification 5.6.2.2.c(3).

2.2.4 Specifications for Gaseous Waste Sampling and Monitoring

a. Station records shall be maintained and reports of the sampling and analyses results shall be submitted in accordance with Section 5.6 of these Specifications. Estimates of the sampling and analytical error, as described in Regulatory Guide 1.21 (Rev. 1), associated with each reported value should be included.

b. Gaseous releases to the environment, except from the turbine building ventilation exhaust and as noted in Specification 2.2.4.c, shall be continuously monitored for gross radioactivity and the flow continuously measured (see footnote d in Table 2.2-4) and recorded. Whenever these monitors are inoperable, grab samples shall be taken and analyzed daily for gross radioactivity. If these monitors are inoperable for more than seven days, these releases shall be terminated.

c. During the release of gaseous wastes from the primary system waste gas decay tank, the process vent monitor shall be operating.

d. All waste gas decay tank effluent monitors shall be calibrated at least quarterly by means of a known radioactive source. All laboratory analyses and other waste gas effluent monitors shall be calibrated at least every 18 months by means of a known radioactive source. The source used to calibrate the known source shall be calibrated by a measurement system which is traceable to the National Bureau of Standards. Each monitor shall have a functional test at least monthly and instrument check at least daily.

e. Sampling and analysis of radioactive material in gaseous waste, including particulate forms and radioiodines shall be performed, at least as frequently as required by Table 2.2-5. 3

f. During the release of gaseous wastes from the primary system waste gas decay tank, the iodine collection device and particulate collection device shall be operating.

Bases

The release of radioactive materials in gaseous waste effluents to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as is reasonably achievable in accordance with the requirements of 10 CFR Part 50.34a. These specifications provide reasonable assurance that the resulting annual air dose from the site due to gamma radiation will not exceed 10 mrad, and an annual air dose from the site due to beta radiation will not exceed 20 mrad from noble gases, that no individual in an unrestricted area will receive an annual dose to the total body greater than 5 mrem or an listed addresses in 5.6.2.1.c within 30 days after confirmation.* This report shall include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous result.

b. Pathway Measurement Report. If pathway samples collected over a calendar quarter show average levels of radioactivity greater than 10 times the trend established by previous monitoring, a written report shall be included in the report required by Section 5.6.1.2.

c. Nonroutine Radioactive Effluent Reports

(1) PWR Liquid Radioactive Wastes Report. If the cumulative releases of radioactive materials in liquid effluents, excluding tritium and dissolved gases, should exceed one-half the design objective annual quantity during any calendar quarter, the licensee shall make an investigation to identify the causes of such releases and define and initiate a program of action to reduce such releases to the design objective levels. A written report of these actions shall be submitted to the NRC within 30 days from the end of the quarter during which the release occurred.

(2) PWR Gaseous Radioactive Wastes Report. See Section 2.2.3c. | 3

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*A confirmatory reanalysis of the original, a duplicate or a new sample may be desirable, as appropriate. The results of the confirmatory analysis shall be completed at the earliest time consistent with the analysis, but in any case within 30 days. If the anomalous value is confirmed, the report to the NRC shall be submitted.