

July 18, 1994

Docket Nos. 50-338  
and 50-339

DISTRIBUTION  
See attached sheet

Mr. J. P. O'Hanlon  
Senior Vice President - Nuclear  
Virginia Electric and Power Company  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

Dear Mr. O'Hanlon:

SUBJECT: NORTH ANNA UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: ELIMINATION OF CERTAIN SURVEILLANCE REQUIREMENTS FOR EMERGENCY DIESEL GENERATORS (EDGs) (TAC NOS. M89208 AND M89209)

The Commission has issued the enclosed Amendment Nos. 184 and 165 to Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The amendments revise the Technical Specifications in response to your letter dated March 1, 1994 as supplemented by letter dated June 16, 1994.

The amendments modify the requirement for operability testing of an EDG when the alternate safety buses' EDG is inoperable. Also, the requirement for operability testing of the EDGs when one or both offsite AC sources are inoperable is deleted. Finally, the amendments eliminate fast loading of EDGs except for the Loss of Offsite Power test and separate the hot restart test from the 24-hour loaded test run of the EDGs. The changes are consistent with NRC Generic Letter 93-05 dated September 27, 1993.

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

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

Enclosures:

1. Amendment No. 184 to NPF-4
2. Amendment No. 165 to NPF-7
3. Safety Evaluation

cc w/enclosures: \*See Previous Concurrence  
See next page Document Name: C:\AUTOS\WPDOCS\NOANNA\NA89208.AMD

OFFICE	LA:PDII-2	PM:PDII-2	EELB	D:PDII-2	OGC*
NAME	ETana <i>BE SK</i>	LEngle <i>BE</i>	CBerlinger*	VMcCree <i>VM</i>	
DATE	07/15/94	07/15/94	06/30/94	07/18/94	07/15/94

810120

9407250113 940718  
PDR ADOCK 05000338  
P PDR

NRC FILE CENTER COPY

DFOI



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

July 18, 1994

Docket Nos. 50-338  
and 50-339

Mr. J. P. O'Hanlon  
Senior Vice President - Nuclear  
Virginia Electric and Power Company  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

Dear Mr. O'Hanlon:

SUBJECT: NORTH ANNA UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: ELIMINATION OF CERTAIN SURVEILLANCE REQUIREMENTS FOR EMERGENCY DIESEL GENERATORS (EDGs) (TAC NOS. M89208 AND M89209)

The Commission has issued the enclosed Amendment Nos. 184 and 165 to Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The amendments revise the Technical Specifications in response to your letter dated March 1, 1994 as supplemented by letter dated June 16, 1994.

The amendments modify the requirement for operability testing of an EDG when the alternate safety buses' EDG is inoperable. Also, the requirement for operability testing of the EDGs when one or both offsite AC sources are inoperable is deleted. Finally, the amendments eliminate fast loading of EDGs except for the Loss of Offsite Power test and separate the hot restart test from the 24-hour loaded test run of the EDGs. The changes are consistent with NRC Generic Letter 93-05 dated September 27, 1993.

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

Sincerely,

A handwritten signature in black ink that reads "Leon B. Engle".

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

Enclosures:

1. Amendment No. 184 to NPF-4
2. Amendment No. 165 to NPF-7
3. Safety Evaluation

cc w/enclosures:

See next page

Mr. J. P. O'Hanlon  
Virginia Electric & Power Company

North Anna Power Station  
Units 1 and 2

cc:

Mr. William C. Porter, Jr.  
County Administrator  
Louisa County  
P.O. Box 160  
Louisa, Virginia 23093

Robert B. Strobe, M.D., M.P.H.  
State Health Commissioner  
Office of the Commissioner  
Virginia Department of Health  
P.O. Box 2448  
Richmond, Virginia 23218

Michael W. Maupin, Esq.  
Hunton and Williams  
Riverfront Plaza, East Tower  
951 E. Byrd Street  
Richmond, Virginia 23219

Regional Administrator, RII  
U.S. Nuclear Regulatory Commission  
101 Marietta Street, N.W., Suite 2900  
Atlanta, Georgia 30323

Dr. W. T. Lough  
Virginia State Corporation Commission  
Division of Energy Regulation  
P.O. Box 1197  
Richmond, Virginia 23209

Mr. J. A. Stall, Manager  
North Anna Power Station  
P.O. Box 402  
Mineral, Virginia 23117

Old Dominion Electric Cooperative  
4201 Dominion Blvd.  
Glen Allen, Virginia 23060

Mr. M. L. Bowling, Manager  
Nuclear Licensing & Programs  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

Office of the Attorney General  
Supreme Court Building  
101 North 8th Street  
Richmond, Virginia 23219

Senior Resident Inspector  
North Anna Power Station  
U.S. Nuclear Regulatory Commission  
Route 2, Box 78  
Mineral, Virginia 231172

DATED: July 18, 1994

AMENDMENT NO. 184 TO FACILITY OPERATING LICENSE NO. NPF-4-NORTH ANNA UNIT 1  
AMENDMENT NO. 165 TO FACILITY OPERATING LICENSE NO. NPF-7-NORTH ANNA UNIT 2

Docket File

NRC & Local PDRs

PDII-2 Reading

S. Varga, 14/E/4

VMcCree

E. Tana

L. Engle

OGC

D. Hagan, 3302 MNBB

G. Hill (4), 5C1 TWFN

C. Grimes, 11/F/23

ACRS (10)

OPA

OC/LFMB

D. Verelli, R-II



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 184  
License No. NPF-4

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated March 1, 1994, and as supplemented by letter dated June 16, 1994, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

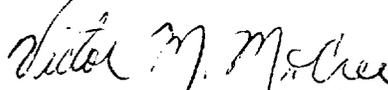
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.D.(2) of Facility Operating License No. NPF-4 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 184, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Victor M. McCree, Acting Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: July 18, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 184

TO FACILITY OPERATING LICENSE NO. NPF-4

DOCKET NO. 50-338

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove Pages

3/4 8-1  
3/4 8-2  
3/4 8-3a  
3/4 8-3c

Insert Pages

3/4 8-1  
3/4 8-2  
3/4 8-3a  
3/4 8-3c

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### OPERATING

##### LIMITING CONDITION FOR OPERATION

---

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators:
  - 1. Each with a separate day tank containing a minimum of 750 gallons of fuel, and
  - 2. A fuel storage system consisting of two underground storage tanks each containing a minimum of 45,000 gallons of fuel (This is a shared system with Unit 2), and
  - 3. A separate fuel transfer system

APPLICABILITY: MODES 1, 2, 3 and 4

##### ACTION

- a. With one offsite circuit of 3.8.1.1.a inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of 3.8.1.1.b inoperable, demonstrate the OPERABILITY of the A.C. offsite power sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours\*, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore the diesel generator 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.

---

\*This action is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION

---

#### ACTION (Continued):

- c. With one offsite circuit and one diesel generator inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and if the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours\*, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of Section 3.8.1.1 Action Statement a or b, as appropriate with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable A.C. power source.
- d. With two of the required offsite A.C. circuits inoperable; restore one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow Action Statement a with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable offsite A.C. circuit.
- e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Following restoration of one diesel generator unit, follow Action Statement b with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable diesel generator.

**\*This action is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.**

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

---

#### 4.8.1.1.2 (continued)

- c. At least once per 184 days the diesel generator shall be started \*\* and accelerated to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal. The generator shall be manually synchronized to its appropriate emergency bus, gradually loaded \*\* to an indicated 2500 to 2600 kw\*\*\*, and operated for at least 60 minutes. The diesel generator shall be started for this test by using one of the following signals on a rotating test basis:
- a) Simulated loss of offsite power by itself.
  - b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
  - c) An ESF actuation test signal by itself.

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

- d. 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 this class of standby service.
  2. Verifying that, on rejection of a load of greater than or equal to 610 kw the voltage and frequency are maintained with  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz.
  3. Verifying that the load sequencing timers are OPERABLE with times within the tolerances shown in Table 4.8-1.

---

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

---

#### 4.8.1.1.2 (Continued)

7. Verifying the diesel generator operates\*\* for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw)\*\*\* and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 2500-2600 kw\*\*\*.
  8. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 3000 kw.
  9. Verifying the diesel generator's capability to:
    - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
    - b) Transfer its loads to the offsite power source, and
    - c) Proceed through its shutdown sequence.
  10. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
    - a) Remote Local Selector Switch
    - b) Emergency Stop Switch
  11. Verifying the diesel generator's hot restart capability by:
    - a) Operating the diesel generator\*\* loaded to an indicated 2500 to 2600 kw\*\*\* for 2 hours or until operating temperatures have stabilized, and
    - b) Within 5 minutes of shutdown verify the diesel generator can be started\*\* and accelerated to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal.
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting \*\* both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

---

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This test band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate this test.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 165  
License No. NPF-7

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated March 1, 1994, and as supplemented by letter dated June 16, 1994, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

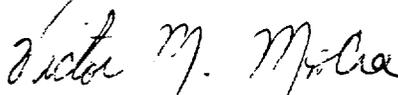
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-7 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 165, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Victor M. McCree, Acting Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: July 18, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 165

TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

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

Remove Pages

3/4 8-1  
3/4 8-2  
3/4 8-4  
3/4 8-5  
3/4 8-6

Insert Pages

3/4 8-1  
3/4 8-2  
3/4 8-4  
3/4 8-5  
3/4 8-6

ELECTRICAL POWER SYSTEMS

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

---

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators:
  - 1. Each with a separate day tank containing a minimum of 750 gallons of fuel, and
  - 2. A fuel storage system consisting of two underground storage tanks each containing a minimum of 45,000 gallons of fuel (This is a shared system with Unit 2), and
  - 3. A separate fuel transfer system.

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION

- a. With one offsite circuit of 3.8.1.1.a inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of 3.8.1.1.b inoperable, demonstrate the OPERABILITY of the A.C. offsite power sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours\*, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore the diesel generator 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.

---

\*This action is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION

#### ACTION (Continued):

- c. With one offsite circuit and one diesel generator inoperable, demonstrate the **OPERABILITY** of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and if the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the **OPERABILITY** of the remaining **OPERABLE** EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours\*, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore one of the inoperable sources to **OPERABLE** status within 12 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Restore the other A.C. power source (offsite circuit or diesel generator) to **OPERABLE** status in accordance with the provisions of Section 3.8.1.1 Action Statement a or b, as appropriate with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable A.C. power source.
- d. With two of the required offsite A.C. circuits inoperable; restore one of the inoperable offsite sources to **OPERABLE** status within 24 hours or be in at least **HOT STANDBY** within the next 6 hours. Following restoration of one offsite source, follow Action Statement a with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable offsite A.C. circuit.
- e. With two of the above required diesel generators inoperable, demonstrate the **OPERABILITY** of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore one of the inoperable diesel generators to **OPERABLE** status within 2 hours or be in at least **HOT STANDBY** within the next 6 hours and in **COLD SHUTDOWN** within the following 30 hours. Following restoration of one diesel generator unit, follow Action Statement b with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable diesel generator.

\* This action is required to be completed regardless of when the inoperable EDG is restored to **OPERABILITY**.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

---

4.8.1.1.1 Each of the above required physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment indicating power availability.
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.2 on a STAGGERED TEST BASIS by:
  1. Verifying the fuel level in the day tank.
  2. Verifying the fuel level in the fuel storage tank.
  3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.
  4. Verifying the diesel generator can start\*\* and gradually accelerate to synchronous speed (900 rpm) with generator voltage and frequency at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz. Subsequently, verifying the generator is synchronized, gradually loaded\*\* to an indicated 2500-2600 kW\*\*\* and operates for at least 60 minutes.
  5. Verifying the diesel generator is aligned to provide standby power to the associated emergency buses.
- b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained as a DRAIN sample in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- c. At least once per 184 days the diesel generator shall be started\*\* and accelerated to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal.

\*\*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

## **ELECTRICAL POWER SYSTEMS**

### **SURVEILLANCE REQUIREMENTS**

#### **4.8.1.1.2 (continued)**

The generator shall be manually synchronized to its appropriate emergency bus, gradually loaded\*\* to an indicated 2500 to 2600 kw\*\*\*, and operated for at least 60 minutes. The diesel generator shall be started for this test by using one of the following signals on a rotating test basis:

- a) Simulated loss of offsite power by itself.
- b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
- c) An ESF actuation test signal by itself.

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

- d. 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 this class of standby service.
  2. Verifying that, on rejection of a load of greater than or equal to 610 kw the voltage and frequency are maintained with  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz.
  3. Verifying that the load sequencing timers are OPERABLE with times within the tolerances shown in Table 4.8-1.
  4. Simulating a loss of offsite power by itself, and:
    - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
    - b) Verifying the diesel starts\*\* on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz.

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

---

---

#### 4.8.1.1.2 (Continued)

5. Verifying that on an ESF actuation test signal (without loss of power) the diesel generator starts\*\* on the auto-start signal and operates on standby for greater than or equal to 5 minutes
6. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and
  - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
  - b) Verifying the diesel starts\*\* on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz.
  - c) Verifying that all diesel generator trips, except engine overspeed, generator differential and breaker overcurrent are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal.
7. Verifying the diesel generator operates\*\* for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated target value of 2950 kW (between 2900-3000 kW)\*\*\* and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 2500-2600 kW\*\*\*.
8. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 3000 kw.
9. Verifying the diesel generator's capability to:
  - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated or actual restoration of offsite power.
  - b) Transfer its loads to the offsite power source, and
  - c) Proceed through its shutdown sequence.

---

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelude and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This test band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate this test.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

#### 4.8.1.1.2 (Continued)

10. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
    - a) Remote Local Selection Switch
    - b) Emergency Stop Switch
  11. Verifying the diesel generator's hot restart capability by:
    - a) Operating the diesel generator\*\* loaded to an indicated 2500 to 2600 kW\*\*\* for 2 hours or until operating temperatures have stabilized, and
    - b) Within 5 minutes of shutdown verify the diesel generator can be started\*\* and accelerated to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal.
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting \*\* both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

#### 4.8.1.1.3 Each diesel generator 125-volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
  1. The parameters in Table 4.8-3 meet Category A limits and
  2. The total battery terminal voltage is  $\geq 129$  volts on a float change.
- b. At least once per 92 days and within 7 days after a battery discharge where the battery terminal voltage decreased below 110 volts or battery overcharge above 150 volts, by verifying that:
  1. The parameters in Table 4.8-3 meet Category B limits and
  2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than  $150 \times 10^{-6}$  ohms.

---

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This test band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate this test.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 184 AND 165 TO

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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

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

DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated March 1, 1994, as supplemented by letter dated June 16, 1994, the Virginia Electric and Power Company (the licensee) proposed changes to the Technical Specifications (TS) for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The proposed changes would eliminate certain surveillance requirements for the emergency diesel generators (EDGs) which have been determined to be unnecessary. These changes are in accordance with the NRC Technical Specification Improvement Program as documented in Generic Letter (GL) 93-05, "Line-Item Technical Specifications Improvements For Testing During Power Operation dated September 27, 1993, and NUREG-1366, "Improvements To Technical Specifications Surveillance Requirements," dated December 1992.

The June 16, 1994 letter provided additional information requested by the staff. This additional information did not alter the proposed action or affect the staff's determination of no significant hazards consideration as noticed in the Federal Register on March 30, 1994 (59 FR 14899).

The NRC has completed a comprehensive examination of surveillance requirements in technical specifications that require testing at power. The evaluation is documented in NUREG-1366. The NRC staff found, that while the majority of testing at power is important, safety can be improved, equipment degradation decreased, and an unnecessary burden on personnel resources eliminated by reducing the amount of testing at power that is required by TS. Based on the results of the evaluations documented in NUREG-1366, the NRC issued GL 93-05.

The safety function of the EDGs is to supply AC electrical power to plant safety systems whenever the preferred AC power supply is unavailable. Consistent with GL 93-05, Item 10.1 and NUREG-1366, the licensee is requesting a change to the testing requirements of an operable EDG when the other EDG is inoperable or an offsite circuit is inoperable, the separation of the hot restart test of an EDG from the 24-hour loaded run, and the elimination of fast loading of EDGs except for the 18-month surveillance test of the Loss of Offsite Power (LOOP) capability.

## 2.0 DISCUSSION

NA-1&2 is a dual unit site with four emergency diesel generators. Two emergency diesel generators are dedicated for each unit. TS 3/4.8.1.1 requires that while in Modes 1 through 4, as a minimum, each unit will have two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and two separate and independent diesel generators.

The current NA-1&2 TS 3/4.8.1.1.a requires that operable EDGs be started and loaded to demonstrate their operability in the event an offsite AC source(s) becomes inoperable. The intent of this testing is to provide added assurance that the operable EDGs are capable of supplying emergency power when the offsite AC sources are degraded (e.g., power fluctuations in the grid, loss of one or both offsite AC sources). The most probable cause of an offsite AC source becoming degraded is severe weather or an off-normal grid condition. Feedback from severe weather or other off-normal grid conditions can also cause the loss of an EDG (if the EDG is tied to the offsite source when it becomes inoperable) leaving the EDG's safety bus without an AC power source. NRC Information Notice 84-69 warns that disturbances on the offsite source can adversely affect EDG reliability when an EDG is operated connected to offsite sources. Therefore, EDG availability is potentially lessened by requiring a demonstration of operability which connects the EDG to the same grid being supplied by offsite AC power. The deletion of the TS requirement to start and load operable EDGs when an offsite AC source becomes inoperable does not increase the probability that the operable EDGs will be unable to perform their safety function. Therefore, in accordance with NRC GL 93-05, the licensee is requesting that NA-1&2 TS be amended to delete the requirement to conduct operability testing of the EDGs when one or both offsite AC sources become inoperable.

Operability testing of an EDG is also required by NA-1&2 TS 3/4.8.1.1.b whenever the alternate safety buses' EDG is declared inoperable due to any cause other than preplanned preventative maintenance or testing. Since there are many potential failures of EDG subsystems that would not be classified as a common mode failure yet would cause an EDG to be declared inoperable, this TS requirement can cause unnecessary testing of the operable EDG when the alternate safety buses' EDG is declared inoperable due to inoperable support equipment or an independently testable component. NUREG-1366 stated that "The NRC staff recommends that the requirements to test the remaining diesel generator(s) when one diesel generator is inoperable due to any cause other than preplanned preventative maintenance or testing be limited to those situations where the cause for inoperability has not been conclusively demonstrated to preclude the potential for a common mode failure. However, when such testing is required, it should be performed within 8 hours of having determined that the diesel generator is inoperable." However, NUREG-1431 allows 24 hours to determine the cause of the inoperable EDG's failure before requiring testing of the remaining operable EDG. This matter was discussed with the NRC staff on May 17, 1994, and the staff stated that 24 hours was an appropriate time frame for testing the remaining operable EDG. Therefore, the licensee is requesting that NA-1&2 TS be amended to require operability testing of an EDG only when the alternate safety buses' EDG is declared

inoperable for any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing. This testing shall be completed within 24 hours, unless the absence of any potential common mode failure for the remaining diesel generator is conclusively demonstrated.

NA-1&2 TS 3/4.8.1.1.2.c currently requires that during the EDG fast start surveillance test conducted at least once per 184 days, the EDG be loaded to an indicated 2500 to 2600 kW in less than or equal to 60 seconds. As stated in NUREG-1366, this fast loading is the most significant cause of accelerated degradation of diesel generators. In accordance with NRC GL 93-05, the licensee is requesting that the NA-1&2 TS be amended to delete the fast loading requirements and allow gradual loading in accordance with the manufacturer's recommendations for all surveillance requirements with the exception of the once per refueling outage LOOP surveillance test which will still require full loading in less than or equal to 60 seconds.

NA-1&2 TS 3/4.8.1.1.2.d.11.a surveillance requirement is being added to verify the EDG's hot restart capability by operating the diesel generator loaded to an indicated 2500 to 2600 kW for 2 hours or until operating temperatures have stabilized. It is the staff's understanding that stabilization refers to the EDG's full mass of metal reaching its thermal equilibrium.

NA-1&2 TS 3/4.8.1.1.2.7 currently requires that within 5 minutes of shutting down the EDG following the refueling outage 24-hour loaded test run that the LOOP surveillance test be conducted. The sequencing of the LOOP test following the 24-hour loaded test run can have a significant impact on the outage schedule. Unnecessary outage delays could result from the inability to conduct the LOOP test within the 5-minute time constraint following the 24-hour run. Additionally NUREG-1366 stated that "There is no safety reason for performing a startup of a diesel within 5 minutes of the 24 hour test run as is required by Technical Specifications." As described in NUREG-1366, on February 15, 1988, Duke Power Company proposed to separate the 24-hour test run from the 5-minute hot restart test. The reason for requesting this change was that separating these two required tests gave the plant operators added flexibility and prevented critical path complications during the outages. This change was approved by the NRC on July 28, 1988. The licensee is requesting the same change for NA-1&2 by eliminating the requirement for the LOOP test following the 24-hour loaded run and adding a new surveillance requirement of a simple hot restart test following a 2-hour loaded run of the EDG.

Additional minor administrative changes are included in this amendment request to correct typographical errors and improve readability.

### 3.0 SPECIFIC CHANGES

These TS changes apply to both NA-1&2 (unless otherwise noted).

- TS 3.8.1.1 Actions are being changed as follows:

Action "a" : Delete sentence "If either EDG has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirement 4.8.1.1.2.a.4 separately for each such EDG within 24 hours."

Action "b": End the first sentence at "thereafter" by deleting the semi-colon (;) and adding a period (.). Delete the remainder of Action "b" and replace with "If the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours", unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore the diesel generator to OPERABLE status within 72 hours or be at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."

At the bottom of page 3/4 8-1 replace the single asterisk (\*) item with "\*This action is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY."

Action "c" : In the first sentence after "...and if the EDG became inoperable due to any cause other than" and "an inoperable support system, an independently testable component, or." In the first sentence after "...within 8 hours\*\* delete semicolon (;) and insert ", unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated," and end the sentence. Start a new sentence at "Restore one of the inoperable ...". Delete the last sentence of Action "c" since a diesel test may not be required.

Action "d" : In the first sentence delete the phrase "; demonstrate the OPERABILITY of two diesel generators by sequentially performing Surveillance Requirement 4.8.1.1.2.a.4 on both diesels within 8 hours unless the diesel generators are already operating;." In the first sentence after "HOT STANDBY" delete the misspelled word "wtihin" and replace with "within" (misspelled on NA-1 only). In the second sentence after "Following restoration of one offsite" delete the misspelled word "cource" and replace with "source" (misspelled on NA-1 only). Delete the last sentence of Action "d" as diesel testing is not required.

Action "e" : The last sentence of this action is deleted since it is unnecessary clarification.

At the bottom of page 3/4 8-2 replace the single asterisk (\*) item with "\*This action is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY."

SR 4.8.1.1.2.c: Change the third sentence to read "The generator shall be manually synchronized to its appropriate emergency bus, gradually loaded \*\*to an indicated 2500 to 2600 kw\*\*\*, and operated for at least 60 minutes."

- SR 4.8.1.1.2.d.7: Delete the last sentence

- SR 4.8.1.1.2.d.9.a (Unit 1 only): Replace the period (.) with a comma (,).
- SR 4.8.1.1.2.d.10 (Unit 1 only): Delete the second "a)" and insert "b."
- SR 4.8.1.1.2.d: Add surveillance requirement after SR 4.8.1.1.2.d.10:
  - "11. Verifying the diesel generator's hot restart capability by:
    - a) Operating the diesel generator\*\* loaded to an indicated 2500 to 2600kW\*\*\* for 2 hours or until operating temperatures have stabilized, and
    - b) Within 5 minutes of shutdown verify the diesel generator can be started\*\*\* and accelerated to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal."
- Page 3/4 8-6 (Unit 2 only) : Add notation \*\*\*\* This test band is meant for guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test."

#### 4.0 EVALUATION

The proposed changes will modify the requirement for operability testing of an EDG when the alternate safety buses' EDG is inoperable, delete the requirement for operability testing of the EDGs when one or both offsite AC sources are inoperable, eliminate fast loading of EDGs except for the LOOP test, and separate the hot restart test from the 24-hour loaded test run of the EDGs. This reduction in operability testing and modified surveillance requirements of the EDGs at power has been examined and accepted by the NRC staff in GL 93-05, Item 10.1. The staff found that while the majority of the testing at power is important, safety can be improved, equipment degradation decreased, and an unnecessary burden on personnel resources eliminated by reducing the amount of testing at power that is required by TS. Therefore, based on all of the above, the staff finds the proposed changes to be acceptable.

#### 5.0 STATE CONSULTATION

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

#### 6.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined

that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding (59 FR 14899). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 7.0 CONCLUSION

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

Principal Contributor: Leon B. Engle

Date: July 18, 1994